COLLABORATIVE ACADEMIC PROJECTS IN A CROSS-CULTURAL CONTEXT

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ABSTRACT

This thesis presents a qualitative study of the factors impacting on collaborative projects in a cross-cultural setting, in this case academic projects carried out under the aegis of a large co-operative programme linking Europe and India. A case study approach is used, focussing on four projects that developed between European and Indian academic researchers, aimed at transferring knowledge between the two continents.

The factors contributing to the success or failure of the projects are assessed. The major factors identified are fourfold:

- The alignment of the project with the personal goals of the participants
- The social, cultural and institutional contexts in which the projects take place
- The role of the coordinators
- The interaction and communication activity of participants, including the role of computer mediated communication.

On the basis of the results of the study, an existing Activity Theory model developed by Cole (1988; 1998) to account for cross-cultural research is extended to encompass collaboration. The potential of the model as a management tool for future cross-cultural collaborative projects is presented.
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CHAPTER 1. INTRODUCTION

1.1 The study and its major themes

This thesis discusses academic collaboration in a cross-cultural context within the framework of a European Union funded programme between Europe and India. The study recognises and examines the impact of different cultures, working contexts and online technology on collaboration. The issues raised in this thesis fall within three major themes: collaboration, computer supported cooperative work and cross-cultural issues. Below is a brief introduction to these three themes that play an important part in interpreting and understanding the findings of the study in this thesis. Section 1.1.1 presents the theme collaboration while sections 1.1.2 and 1.1.3 present the computer supported collaborative work and cross-culture studies respectively. These sections also present the gaps in the studies that would be addressed in the study and presented in this thesis.

1.1.1 Collaboration

Collaboration is a means of pooling specialized knowledge to solve problems and a way of creating and sharing knowledge for its own sake. According to Kaye (1995):

To collaborate (co-labore) means to work together, which implies a concept of shared goals and an explicit intention to "add value"- to create something new or different through a deliberate and structures collaborative process, as opposed to exchanging information or passing on instructions. (p: 195)

Collaboration is an issue in a number of domains including academia. Hutchens (1998) argues that in the academic sector, university faculty have traditionally approached research and teaching as a solitary venture rather than as a collaborative activity since the university system rewards individual work through promotions, sabbaticals and so on. Consequently "team teaching and collaborative research within or across disciplines are rare" (p: 02). But over the years the universities and other sectors have recognized the importance of collaboration. Austin and Baldwin (1992) point out:

The growth of collaboration is not limited to the academic sector. Indeed, higher education is in the midst of a larger movement that is sweeping across our society. For example, teaming is increasingly prevalent in business, health care, and public policy work. Turbulent environments, rapidly changing technologies, and increasingly specialized knowledge are some of the factors that are making collaboration more attractive to professors and society in general. (Electronic document)

Schrage explains that the desire to construct new meaning through interaction is what distinguishes collaborative communities from any other communities. For Schrage "The collaborative community becomes a medium for both self-knowledge and self-expression" (Schrage, M 1990 p: 48). Hence collaboration is being encouraged in various working environments and educational contexts. Austin and Baldwin (1992) segment collaboration among faculty into "supplementary
collaboration” and “complementary collaboration”. “Supplementary collaboration” involves tasks being divided between specialists who make separate contributions to a shared project, while “complementary collaboration” occurs where researchers work jointly on various aspects of the project. Supplementary collaboration and complementary collaboration can also be described as interdisciplinary and multi-disciplinary collaboration, respectively.

Recognizing the growing move towards collaboration in different domains, funding bodies such as the European Union and the national research councils have introduced collaboration into their funding policies. Hence major projects with large amounts of funding are being launched to encourage collaboration within and across universities and industries and the presence of a collaborative element is often a required factor in obtaining funding. Furthermore there have also been an urge to exploit the new technologies to support and facilitate communication and collaboration across national, industrial and cultural boundaries. The following section addresses the use of technology for collaboration and the gaps in the studies carried out in the area.

1.1.2 New Technologies, Collaboration and Computer Supported Cooperative Work (CSCW)

Collaborative activities have been deeply affected by the technologies through which they are mediated. Starting as a tool for the United States defense department, the Internet was open to the public in the early 70’s. By the early 80’s the service was freely available to the “science community” in North America and Europe and by the mid 80’s the British government introduced the Joint Academic Network (JANET) and the US National Science Foundation the NSFNet to encourage the use of the Internet throughout higher education (Griffiths, R T 2002). Since that time computers and computer networks have been taken up by educational institutions, governments and organizations to facilitate work and learning. The development of the World Wide Web in the mid 1990’s greatly expanded this use.

With the arrival of computers and online technology the study of computer supported collaborative learning (CSCL) and computer supported cooperative work (CSCW) have emerged as fields of study although there are arguments on whether or not CSCW is a new field of research. According to Bannon and Hughes (1993), CSCW is an “umbrella term” which embraces people from different disciplines with shared interests assembled together to explore issues “without any common ground as to the concept of CSCW”(web page).
Collaborative activities without co-location have become easier and quicker with the advent of the new technologies. Over the years the Internet has been recognised by proponents of computer support collaborative work as a tool that would facilitate collaborative activity within and beyond the building where the participants are located. Hence, a number of studies within CSCW have been carried out on the use of Internet technology for collaboration in organizational and educational contexts. Among these studies, some have addressed the potential and limitations of computer mediated communications (CMC) for collaborative learning and work. Comparisons between face-to-face communication and online communications have been discussed (Siegel, J et al. 1986) and their potential for supporting collaborative work (Mitra, A et al. 1999; Walsh, J P et al. 2000). It is argued (Gay, G and Lentitni, M 1995) that there is a correlation between effectiveness of the activity and media richness. The use of online environments for group or collaborative work has also been studied (Gallupe, R B and McKeen, J D 1990; Burke, K C, L 1995; Cox, D 2000). These studies have been carried out to identify the social and behavioural aspects of technology use in order to develop effective online environments to support collaboration. The use of new technology for cooperative work has led to the possibility of organizing and setting up collaborative activities at a distance. Increasingly collaborative projects are being organized across national and cultural boundaries (Kaye, A R 1993; Sharples, M et al. 1993), but few studies have been carried out on the collaboration of academics that set up collaborative activity for their students or participate in collaborative activities themselves across cultural and national boundaries (Ishii, H 1990; Herring, S C 1996; McLaughlin, C and Ponte, P 1997; Pauleen, D J and Yoong, P 2001). With globalization and the rapid development of technology to support these activities, it is important to study collaborative activities that take place across cultures and nations. As distance learning courses and virtual universities are being set up, it is essential to study the collaborative activities of academics within and across cultural, disciplinary and national boundaries.

1.1.3 Cross-Cultural studies

With growing interest shown towards inter-organizations and international collaborations, it is important to address the impact of culture in collaborative activities. "Culture" has been defined a number of ways. Hofstede (1997) defines culture as "the collective programming of the mind that distinguishes the members of one group or category of people from another" (p: 05). He argues that every person carries with them the norms and ways of thinking, acting and feeling which has been learnt throughout their lifetime as a member of a certain group. Furthermore he explains that the source of culture resides in the social environment in which one grows up and "collect one’s life experiences" (p: 04). When these patterns of thinking, feeling and acting have established
themselves within a person's mind she must unlearn these before being able to learn something different and unlearning is more difficult than learning for the first time.

The cross-cultural studies that have been carried out so far have predominantly been in the business sector (Tayeb, M H 1988; Hofstede, G 1991; Hofstede, G 2001) These comparative studies have been carried out to identify the power relations, work practices and cultural influences in organizations. There have also been studies on cross-cultural communication (Brislin, R W 1981; Knapp, K et al. 1987; Brislin, R, and Yoshida, T. 1994; Frazee, V 1998). With the introduction of new technologies there have been studies on the use of technology and the cultural impact on the use of such technologies for computer supported work (Ishii, H. 1990; Herring, S.C. 1996; Kambayashi, N and Scarbrough, H 2001) and learning (Wolfe, J 2000; Ziguras, C 2001). However, there are few studies, again in the management area of the business sector (Teagarden, M B et al. 1995) which address cross-cultural collaborative work. Even fewer studies have been carried out on cross-cultural academic collaboration (Easterby-Smith, M and Malina, D 1999). The study carried out by Easterby-Smith and Malina (1999) reports only on face-to-face cross-cultural academic collaboration.

In this chapter, section 1.2 presents the research questions addressed in this thesis and section 1.3, the context for the EU-India Cross-Cultural Innovation Network project on which the study presented in this thesis is carried out. Section 1.4 presents a brief history and description of the EU-India Cross-Cultural Innovation Network project while section 1.5 presents the roadmap to the thesis.

1.2 Research Questions
In this thesis I will be investigating the collaboration of academics in a cross-cultural environment with particular attention to what drives the participants to collaborate, the role played by the coordinators, the impact of different working contexts on collaboration and the use of technology. I will also examine the application of the Activity systems model proposed by Michael Cole (1988; 1998) for cross-cultural research to the scenario of cross-cultural collaborative activity.

The aim of the study is to identify the factors that impact upon collaborative activity in a cross-cultural context.

Researchers addressing cross-cultural issues have carried out comparative studies in business organizations (Tayeb, M.H. 1988; Hofstede, G. 1997; Hofstede, G. 2001). However only a few
studies (Easterby-Smith, M. and Malina, D. 1999) have addressed cross-cultural collaboration. Schrage (1990) argues that the essence of collaboration resides on the desire to address and solve a problem at hand or to make new discoveries. However this fails to address factors such as the desire to participate in collaboration, which is much closer to the participants interests than just the desire to solve a problem or to create something new, in order for a collaborative activity to be instigated and successfully completed. In a cross-cultural collaboration what motivates the participants from such varying cultural backgrounds, national, institutional and disciplinary cultures to come together to identify and participate in a collaborative activity? In this study of collaboration in a cross-cultural context, I will be trying to find out:

- What drives the participants of the EU-India programme in wanting to identify and work on a collaborative project?

Hofstede (1997; 2001) and Tayeb’s (1988) comparative study on business organization across fifty different countries on how organizations function and work practices showed that national cultures impacted on the organizational culture and created different work practices. The participants in the collaborative activity in the EU-India programme come from not only different national cultures but also carry with them the cultures and work practices of the different institutions that they are members of. Hence it is important to take into account as to

- How would the different institutional cultures impact upon the collaboration of the EU-India participants?

In Projects where there have been more than three or four participants, there has been a need for a coordinator to manage the project. Studies have mapped the various methods of coordination, such as parallel working, sequential working and reciprocal working (Sharples, et al. 1993). The role and characteristics of a coordinator in a computer mediated collaborative environment have also been studied (Kaye, A.R. 1993; Pauleen, D.J. and Yoong, P. 2001). All of these studies have recognised and shown the importance of coordinators for group collaboration. However few studies have addressed the role of the coordinator in a cross boundary collaboration (Pauleen, D.J. and Yoong, P. 2001). In the EU-India programme, the participants come from nine different academic institutions and disciplinary areas across two continents and the coordinators are a main part of the programme, to manage and support the collaboration between these diverse groups of people. Hence it was important to find out,
What is the role of the coordinators in the EU-India programme?

Studies that have been carried out on cross-cultural collaboration have addressed academics working in a face-to-face environment. In contrast, the collaboration in the EU-India Cross-Cultural Innovation Network programme was taking place across cultures with the support of face-to-face meetings and online technology. This makes it important to identify how the differences in cultural practices and the use of online technology might impact on the collaboration of this geographically dispersed group. Studies carried out in the use of on-line technology for collaborative activity have addressed the potential and limitations of such technology for collaborative work. All of these studies have looked at scenarios where all the participants in the collaboration readily use the online technology, especially text-based communication mediums such as emails and discussion forums. Since my study is carried out in the cross-cultural environment where the participants using the online technology come from different linguistic backgrounds, a further question is:

Would this difference in linguistic and cultural backgrounds affect the way in which the participants approach and use online text-based communication medium for collaborative activity?

These are a few of the factors that might play an important part in the inception, progress and successful completion of the collaborative projects in this programme.

As Activity Theory provides the theoretical basis for such a study, I will draw on this theory to build a framework for the study of collaborative academic projects in a cross-cultural context. Activity Theory has been used to study the organizational (Holt, G R and Morris, A W 1993), technological (Bardram, J 1998; Fjeld, M et al. 2002) and cross-cultural (Cole, M. 1988; 1999) scenarios. Michael Cole, arguing for cultural sensitivity, has proposed a minimum of two interacting activity systems model for cross-cultural research by extending the single activity systems model. On another level I investigate the effectiveness of the interacting activity systems model proposed by Michael Cole for the study of cross-cultural collaboration.

How effective is the interacting activity systems model for cross-cultural research in mapping and discussing cross-cultural collaborative activity?
Activity Theory makes it possible to address an activity where the actor, the tools that mediate activity and the context in which the activity is taking place. Activity, Leont’ev (1978; Engestrom, Y 1987) argues, that activity is driven by motive which here in the EU-India programme makes it possible to examine the motive of the participants in initiating and carry out the various collaborative activities. Activity Theory sees “tools” as the mediating factor that is essential for the activity to be carried out. These tools, it argues can be physical tools such as a hammer or a computer and psychological tools such as language and semiotics. It also argues that activity is mediated not only by tools but also by human relationships (Engestrom, Y 1999; Engestrom, Y et al. 1999). Activity Theory makes it possible to take into account the role of human mediation as well as tool mediation in the various projects identified in this cross-cultural programme. According to Activity Theory, activity itself is seen as providing the context, as the activity is embedded in a scenario in which it is taking place and carrying with it the phenomenon of the scenario that in which it is situated (Nardi, B A 1996). This enables to study the impact of the working context in which the activity is taking place and also to recognise the process that is involved in that context.

The interacting activity system model developed by Michael Cole (1998) for cross-cultural research on human development, addresses the importance of recognizing cultural factors in mapping activity systems when comparing activities across cultures. This model presents the framework to map and discuss the different cultural contexts that the participants are working in, the role of human mediation, the use of technology as mediating tool, the motive that is driving the activity and the impact of these factors on the activity. Hence I use this model to represent and discuss the various cultural contexts of the participants involved the collaborative activity and factors that impact upon this activity.

The following section presents the backdrop that may have contributed to the urge to build stronger links between Europe and India. It also discusses the relationship between Europe and India and the mechanisms being proposed by the European Union in order to strengthen ties with India.

1.3 Context
At the end of the Second World War Europe was faced with the major challenge of rebuilding itself economically and politically. This economic and political difficulty was exacerbated with having to finance and manage a number of colonies around the world. Hence, following the war, in the 40’s and 50’s most of the European colonies in Asia gained independence. Preston and Gilson (2001) explain the rise of American influence in Asia as follows:
The end of the Second World War saw the USA as the pre-eminent economic, military and political power within the global systems. In both Europe and East Asia the USA was a key centre to which all shades of domestic opinion looked. It was an economic centre, military centre, a political centre and a cultural centre. However, the period of US pre-eminence came to an end. One contributory factor was the rise of powerful economies in both Europe and East Asia. (p: 14)

Nevertheless, the rise of these economies did not bring about any notable change in the linkages between Europe and Asia that had weakened in the aftermath of the Second World War. At the end of the cold war period, Europe was looking for different thinking and recognised the importance of regionalism. Preston and Gilson (2001) point out that the Asian and European regions “constitute different forms of regions…. the European Union accommodates a coherent integrative framework … in which supranational structures sit alongside continuing intergovernmental processes; while Asia houses only loose regional structures, the representatives of which eschew European-style integration.”(p:15) Links between Europe and Asia have got stronger since the early 1990’s with increasing trade and foreign investments across the regions. Furthermore, Asian countries have participated and contributed to “post-conflict nation building following crises in Bosnia and Kosovo during the 1990’s (p:16)” which is going beyond economic interests to recognise the political, economic and social roles played by these regions with regards to globalisation. The authors also point out that the discourse in the past have been to move from one discursive pattern to another, such as political and economic ideology, but now with globalisation there is recognition of multiple discourses to exist simultaneously. This recognition of multiple discourse has strengthened the urge to create possibilities to learn from and build relationships across nations and cultures.

The next section (1.3.1) presents a brief account of the relationship between India and Europe in the recent years. Section 1.3.2 presents a short description of one of the mechanisms, the EU-India Economic Cross-Cultural programme, set up by the European Union in an effort to strengthen links between Europe and India

1.3.1 Europe and India
Since the Second World War Europe has built itself as an economic and political bloc. However the different states with different cultures have had to find mechanisms to mediate these and co-exist under the umbrella of the European Union. Unlike Europe, which is an amalgamation of different nations, India is the largest democratic nation with different cultural, religious and linguistic groups. In India there seem to be systems in place to mediate these differences in order for it to exist as one nation. These systems that make India, along with its economic and political power in the Asian region have captured the attention of the United States of America and Europe.
Europe historically had enjoyed a close relationship with India but these links were weakened after the Second World War when India ceased to be British colony and Europe was concentrating on rebuilding itself. Since the Cold War there has been a realignment of power in West and America has emerged as the super power. Europe is trying to build itself redress the balance of power in the West. In Asia, India is seen as the emerging political, military and economic power in the region. Hence it has become important for America and Europe to build strong links with India in this globalisation period.

Lately with the rapid growth of digital technology, India has emerged as one of leading nations to draw investments in the area and to provide highly skilled personnel to major technology companies in USA and Europe. Major technology companies in the USA, such as Microsoft, have turned to India for skilled personnel to aid with their technological designs and developments. As a result India has established a strong link with the USA. Many European companies are now investing in India's human resource while European Union is setting up mechanisms such as civil society partnership to re-establish and strengthen professional, economic and political links between Europe and India.

The aim of these civil partnerships is explained as follows:

The Government of India and the European Union are committed to the importance of raising public awareness on India-EU links and to the need of increasing mutual understanding between the two regions. Mobilising civil society channels is recognized as being vital in achieving this objective. (European Commission 2003)

One of such civil partnerships is EU-India Economic Cross-Cultural Programme, which is presented next.

1.3.2 EU-India Economic Cross-Cultural Programme
There have been ongoing efforts between the European Union and the Government of India to build a civil partnership.

Projects supported by the programme (EU-India Economic Cross-Cultural Programme) aimed to develop networks and joint productions, encourage further training for academics and professionals, facilitate the exchange of information and research collaborations and support the organisation of cultural events with a view to developing mutually beneficial partnerships and stimulating industry-related activities. (European Union 2002)

The European Commission views civil society as the central theme of the EU-India partnership. It also recognizes the Non-Governmental Organizations (NGO's) as important partners for the developmental process of the European Commission. It is under this category of "Civil society and
NGO's that the Economic Cross-Cultural Programme is placed as one of five civil society partnerships. The inception and aim of the EU-India Economic Cross-Cultural Programme is as follows:

"The EU-India Economic Cross-Cultural Programme was initiated by the European Commission in 1995 and launched in 1997 (first Call for Proposals), with the aim to foster civil society links and networks between India and the European Union. This was an innovative expression of economic and cultural cooperation, extending partnerships beyond the traditional government-to-government collaboration. (European Commission 2000)

Furthermore, the key objective of the Economic Cross-Cultural Programmes is to promote and facilitate joint ventures in the areas of media, enterprise and university between civil society organisation in India and the European Union. The overall objective of the Programme is to promote interaction between India and the European Union by enhancing mutual knowledge and facilitating direct contacts between the two regions.

In order to achieve this the programme proposes to:

- Encourage and develop links between European and Indian media and cultural organisations, sectoral organisations in trade or industry, research centres, universities, professionals, decision-makers, and opinion formers;
- Develop networks, exchanges and joint productions in the domain of media and communications;
- Support the organisation of cultural events;
- Promote the exchange of know-how between entrepreneurial networks;
- Facilitate the exchange of information, joint research and the pooling of experience between universities;
- Encourage cross-sectoral linkages between the three dimensions outlined below;
- Help strengthen a two-way, dynamic, cultural and economic presence in the regions.

(European Commission 2003)

The Programme covers three different dimensions:

- Media & Communication
- Entrepreneurial Networking
- University & Studies

(European Commission 2000)

Under this EU-India Economic Cross-Cultural programme, the EU-India Cross-Cultural Innovation Network project (EU-India programme) was one of the 29 projects selected from the 407 applications submitted in response to the first call for proposal (see Appendix 1). The following section presents this project in detail.

1.4 EU-India Cross-Cultural Innovation Network project

This section presents a brief description of the EU-India Cross-Cultural Innovation Network project. Section 1.4.1 presents a short history of the birth of the project and section 1.4.2 presents
the technologies provided to support the activities. Section 1.4.3 addresses the identified collaborative activities in the project while section 1.4.4 presents the institutions involved in the project.

1.4.1 History
Ragu (names have been changed to preserve anonymity), the coordinator of the project who had been involved in pervious European Union funded programmes, had come across the possibility of setting up a cross-cultural innovation programme between academic institutes in Europe and India through the EU-India Cross-Cultural Economic programme launched by the European Union in 1995. In early 1996 Ragu travelled to India and met Arnn who eventually became the Indian coordinator for the EU-India Cross-Cultural Innovation Network project and discussed submitting a proposal in response to the call for proposals from the EU-India Economic Cross-Cultural programme. Arnn, who had worked on a number of Human Centred Systems activities organised by Ragu during the late 80s and early 90's and also been involved in a number of collaborative activities between India and Japan, agreed to take part in the EU-India Cross-Cultural Innovation Network project proposal. Daniel from the University of Wales College Newport, who had been working in European projects with Ragu and the Human Centred Systems activities, also become a participant in the project. Through the personal networks of Arun in India and Ragu in India and Europe, the proposal brought together nine participants from nine academic institutes from India and Europe. The European Commission accepted the proposal and the three-year EU-India Cross-Cultural Innovation Network project was set up in September 1998.

The idea behind the **EU-India Cross-Cultural Innovation Network** project was to encourage networking among academics and entrepreneurs for collaboration in applied research in socio-economic and entrepreneurial innovation. The programme involves universities and entrepreneurs from Europe and India. It identifies its main aim as building a sustainable co-operation between EU and India in order to exchange the cultural models of innovation within and across the regions of EU and India. Developing inter university postgraduate and doctoral training is also seen as an important part of the venture. Furthermore this venture was seen as a vehicle to build proactive and cross disciplinary activities to enable knowledge flow across organisational, entrepreneurial and regional cultures. The Human Centred Systems approach (Gill, K S 1996; Gill, K S 1997) is the theoretical basis of this programme and this approach takes a holistic approach to science and technology where by it recognises the diversity of culture and the tacit dimension of knowledge (EU-India Cross-Cultural Innovation Network 1998). The EU-India Cross-Cultural Innovation
Network programme addresses the diversity of entrepreneurial cultures within and across Europe and India.

Some of the main ideas of EU-India Cross-Cultural Innovation Network project address some of the issues of EU-India Economic Cross-Cultural Programme and the wider European Commission's concerns of the need to strengthen links between India and Europe:

1. To increase the visibility of Europe in India through building long term links between the European and Indian universities, developing new modes of collaboration between universities and between universities and entrepreneurs. By extending the university network to entrepreneurs and entrepreneurial organisation within both EU and India, the project provides a model for dynamic two-way collaborations for enhancing cross-cultural presence in the two continents.

2. By integrating exchanges of researchers with the ongoing processes of R&D projects, joint seminars, workshops and network forums, the project provides an integrated model for university collaboration in applied research.

3. By enabling equability of participation of project partners from the EU and India, complementing diversity of geographical regions and promoting common vision of applied research, the proposal not only ensures equability of involvement but also builds upon the valorisation of diversity of university and entrepreneurial dimensions. This examination of diversities and the influence of the practical modes of entrepreneurship can contribute to widening our scientific understanding and practical know-how of cross-cultural innovation.

4. By focusing on direct links between applied research and the productive sector and on the role of new media in enabling such links, the project intends to examine and develop new models of interaction between the universities and entrepreneurs. By integrating the university dimension with related key areas of media and entrepreneurial dimensions, the proposal provides a new media based framework for supporting multi-disciplinary applied research, new forms of links between universities and entrepreneurs, and new forms of distance learning, communication and support.

5. The project will develop a virtual innovation network in order to examine and experiment with new kinds of collaboration in education, research and entrepreneurship. It will complement
academic and entrepreneurial networks and will provide a distance learning and knowledge transfer resource, thereby contributing to the sustainability of existing collaboration and providing new possibilities of practical cooperation between academics, entrepreneurs and other social actors.

The five aims of the EU-India programme deal with setting up mechanisms that would enable ongoing interaction and collaboration between the two regions. This would contribute, from the European Commission’s point of view, to strengthening the links between Europe and Asia which is still seen as weak compared to the links between the US and Asia and US and Europe (Preston, W. and Gilson, J. 2001). The programme also stresses on recognising the diversity of the regions and the university and entrepreneurial cultures. This aspect addresses the emerging globalisation discourse, which emphasises the need for diverse discourses to exist simultaneously. As globalisation takes shape, interaction and communication across nation and cultures have become an important issue. With the existence of diverse discourses it has become essential to develop new models of interactions to mediate and negotiate theses varying discourses for successful collaboration and communication across cultures and regions. This programme takes up the challenge of developing models of interactions between the university and entrepreneurs. By trying to build networks between the university and entrepreneurs across and within the Europe and India, the programme offers the opportunity to identify, examine and develop models of innovation, cross-cultural communication and cross-cultural collaboration. The fact that the programme takes an action research approach makes it possible for the participants to be involved in the very process of identifying and developing the various models that could have implication beyond this academic and entrepreneurial collaboration. Even though the EU-India programme has academics participating in action research, the models that are developed would become relevant to a wider audience such as the Business world where companies are interested in setting up off-shore service providers.

The EU-India Cross-Cultural Innovation Network has nine participating academic institutions, five institutions from Europe and four from India. They are:

European Institutions:

- University of Brighton (UoB), UK
- University of Wales College Newport (UWCN), UK
- Technical University of Denmark (DTU) Lyngby, Denmark
- University of technology (RWTH) Aachen, Germany
Cross-cultural teams consisting of academics and researchers from the nine participating institutes set up and carried out joint research and development activities and studies to investigate the process, mechanisms, methodologies and practices of applied research in European and Indian contexts. These project activities have been categorised under three areas: Enterprise and Innovation, IT and Innovation (Socio economic innovation and Multimedia and value added innovation) and Knowledge and Innovation.

Within the scope of a Ph.D. project, it was impossible to study all the aspects of collaboration in this context. I study four cases that were identified from the projects that emerged out of the programme to address the questions posed earlier in this chapter.

Within the EU-India programme and this study ICT emerged as an important issue. Guided by the programme’s proposal, certain assumptions and literature on collaborations at a distance certain technological initiatives were introduced. The following section presents the argument for providing certain type of technology to support the collaborative activity of the dispersed group of participants in the project.

1.4.2 Technology provided by the EU-India programme to facilitate collaboration

The EU-India programme has worked to develop a virtual innovation network, to complement the academic and entrepreneurial network for a sustainable collaboration between academics and entrepreneurs in Europe and India. The virtual network was developed in the form of a web site. This web site provided a shared space for:

- Information dissemination- forthcoming events like conferences and seminars
- Information database (knowledge base) - research results, papers, contact details, and related studies.
- Postgraduate training course
- Communication tools- discussion forum and mailing list.
Collaboration in the programme and in the various projects took place at face-to-face and electronic levels. In the context of the EU-India Innovation Network, the two levels were interdependent. While face-to-face collaboration provided "meeting points" at workshops, seminars, conferences, and informal discussions sessions, electronic "meeting points" were provided by emails, mailing list, discussion forum and the web site.

Studies on using computer-mediated tools for collaboration show that multimedia communication, involving for instance audio and video, can enhance collaborative activity (Gay, G. and Lentitni, M. 1995). However, to set up multimedia of communication for the EU-India programme was not possible since India had a low bandwidth Internet connection and difficulty with accessibility of hardware as well as software for on-line communication. The Universities and the Research Institution did have online facilities but the Internet connections were slow and restricted. Consequently, it was decided that text based communication tools would be the best option.

Since academics were going to work from a distance and on various components of the project there was a need for public and private communication domains. Hence, TeamRooms (described below) and email were provided as private domain for interaction and communication. This is a private domain, in the sense that only the authorised participants with username and password can access the system. This private domain was seen as a place where participants of a particular project could share their ideas, discuss them without any intrusion from non-participants. Mailing list (described below) was provided as a public domain where participants could discuss their activities with a wider audience while gathering information from others from the list.

1.4.2.1 Mailing List
Mailing list is a public forum where the members of the list would receive any messages posted by other members via email. This is an asynchronised medium, which gives the participants the opportunity to read the messages at their leisure and respond to them. This is a "public forum" in the sense that anyone could join the list and become a member to participate in discussions and share information. The list does not expect members to be active participants. They could be "lurkers" in the list and follow the discussions or pick up information.

The mailing list for the project was set up in September 1999 just before the first conference and workshop titled "Enterprise Cultures and Innovation in the Information Society" organised by the
EU-India programme. At this workshop the participants were informed about the mailing list. Information and instructions on how to join the mailing list was given to all participants.

1.4.2.2 TeamRoom
A collaborative project at a distance depends heavily not only on the frequency of communication but also the flexibility of such communication. I had set up TeamRooms, (term used by Lotus Dominos) for participants on two of the cases studied here, the Floriculture Project and the Computer Science Project. (See below and Appendix 2)

The product used in this instance was TeamRoom provided by Lotus Dominos, which has facility to link many participants in an asynchronous discussion. The reasons for choosing this environment were based on a number of issues. The participants who were to use this environment come from different continents and since this discussion group is asynchronous the factor of time difference between countries will not affect the discussion. It also provides the opportunity for the participants to take time to reflect on the issues that are being discussed before they can respond. They will not be pressured by the time or cost factor. Unlike email discussions, the discussion group gives the participants to follow the thread of a discussion without difficulty, as there are facilities to follow discussions by thread or by topic. This TeamRoom environment also has capabilities to set a system up, which would allow participants to conduct private as well as public discussions. As a result access to the TeamRooms is password protected. The application incorporates a search function to trace discussion topics by author or subject. Moreover documents can be sent to other participants in the discussion groups for reviews or comments. An archive or library can be created which would enable the participants to retrace their activity anytime in the future.

The provision of these TeamRooms to the Computer Science and Floriculture projects' participants was made on the basis that it would give the participants the option of uploading their work plans, research reports, joint papers and discuss them before publishing them or taking them any further. It seemed to be providing all the facilities for collaboration at a distance in one place- email, text-based discussion forum and a place to review articles. The email facility provided in this environment allows the participants to inform the others in the group when there is a new article has been posted for discussion or a revision has been carried out.

1.4.2.3 Web site
The web site was designed as a tool to support collaboration in a cross-cultural environment. The approach to design was taken from two points of view.
Web site as a tool to disseminate information

The web site was seen as a tool to disseminate information on the programme to a wide audience. The information included the aims and objectives of the EU-India programme, the number of projects and the participants. It also contained short introductions to the participants of the programme. The idea was not only to present the information to the public but also to the participants of the programme enabling them to identify participants with similar interests to set up projects. It was also seen as a place to post information on the forthcoming EU-India programme activities, like conferences and workshops. Participants' working papers on their research activity were posted on the site.

Being a cross-cultural programme, there was a strong feeling that information provided on the web site should be displayed from the point of view of the respective participants and their cultures. So the web site was set up to act as a gateway to the participants' web sites on the programme, built and maintained in their respective institutions. The web site interface was designed to give the participants control over their information that they wanted to see on the EU-India web site.

Web site to host discussion forums

The site was used as an entry to point the project's mailing list and the TeamRooms set up for two of the projects. It was also envisaged that any new communication or discussion forums set up by the participants in the programme would be linked through the web site.

The above technological initiatives were put in place to support the participants in their collaborative activity. The following section presents the projects identified and carried out by the participants in the programme.

1.4.3 Activities of the EU-India Cross-Cultural Innovation Network Project

As the EU-India programme evolved, participants from India and Europe and the coordination centre identified a number of projects. These projects ranged from Acton research projects to training programmes. Activities that were undertaken by the partners include:

- Project on Networks in the Floriculture sector (NISTADS and UCWN)
- Project on Artisanal design and technological intervention (NISTADS and UCWN)
- Project on Entrepreneurial networks in the Dairy sector (DTU, IpL, GLS, NISTADS and PAU)
- Project on Information Technology and distance learning (DU and UoB)
- Project on Extension education and training (PAU)
- Project on Multimedia training (UCWN, DU and PAU)
• Project on Postgraduate Information Technology course design (PAU and UoB)
• Project on Web-based SME innovation training (Aachen)

From these projects the cases for my study were selected. The first four projects were chosen as the cases for my study of collaboration in a cross-cultural context. The process of selection of the cases for study and the cases themselves are discussed in the following chapters (Chapters, 3, 4, 5, 6 and 7).

The following section presents brief accounts of the institutions in which the participants of the identified cases for study are located.

1.4.4 Working context of the case study participants
This section presents the working context of the participants involved in the four case studies to be discussed in this document. These participants come from five of the nine Institutions participating in the EU-India Cross-Cultural Innovation Network programme (for a summary see Appendix 3). A short introduction is given on each institution but for detailed information on the research activities and technological capabilities see Appendix 4 and for short biographies of the participants involved in these cases see Appendix 5.

Europe

1.4.4.1 University of Brighton (UoB), East Sussex
• Status: University
• Participant(s):
  • Ragu, Coordinator EU-India programme
  • Joe, Senior Lecturer
  • Vy, Research Student

The Brighton University is a former Polytechnic that was granted University status in the early 90’s. It has sixteen schools under six faculties. The Faculty of Management and Information Sciences incorporates the Business School, the School of Computing, Mathematical and Information Sciences, School of Service Management and a research centre. This is a new faculty was created in 2002 merging the Faculty of Information Technology and the Business School, to address teaching and research across the range of information and management. The faculty has international links and has a strong regional role in the south east of England. (University, B 2002) The School of Computing, Mathematical and Information Sciences deals with teaching, research and consultancy in the area of media and communication, librarianship and information management, computing and
information systems and mathematical sciences. The school offers foundation degrees, Higher National Diploma (HND), Bachelors degree, Masters degree and Ph.D. programmes.

Joe, Ragu and I (Vy) have access to the web and email through our desktop computers and we also have access to telephones with personal extensions. Furthermore, we also have access to the Internet services provided by the University.

1.4.4.2 University of Wales College, Newport (UWCN)
- **Status:** University College
- **Participant(s):**
  - Daniel, Head of Research and Enterprise and Senior Lecturer

The University of Wales comprises a federation of university colleges distributed throughout Wales. University of Wales College, Newport has seven schools. One of the schools is The School of Art, Media and Design. The School of Art is one of the schools to be awarded degree-awarding status in 1963. The School of Art, Media and Design, one of the leading art and design institutions in the UK, offers undergraduate and postgraduate degrees. The School has links with the local and international research and enterprise.

Daniel has access to the University network and web services through his desktop computer in his office. He also has access to the university networks from home.

1.4.4.3 Technical University of Denmark (DTU), Lyngby
- **Status:** University
- **Participant(s):**
  - Leo, Senior Lecturer

The Technical University of Denmark (DTU) is an important centre of engineering education and research in Denmark. DTU is involved in a number of national and international networks and research programmes.

The Institute of Technology and Social Sciences is concerned with technological change and its consequences for working environment and society. The research and teaching at the Department deal with the interrelations between technology and society.

Leo has access to the Internet through his desktop computer and also has a telephone with personal extension in his office. He has a web page with information on his interests and activities.
1.4.4.4 Delhi University South Campus, University of Delhi

- **Status:** University Campus
- **Participant(s):**
  - Arun, Coordinator EU-India programme
  - Ajith, Systems Manager

The Delhi University has 79 colleges under its structure. Under this college system they have 14 Faculties, 86 Academic departments across Delhi City. The Institute of Informatics and Communication is an institute in the Centre for Advance Study, which exists in its own right. The Institute of Informatics and Communication was set up in 1998 and the participants of the EU-India project see it as a big opportunity for the IIC to be part of the project. This young institute has three divisions- Informatics, Environment and Natural Resource Management (ENRM), and Information Technology (IT) in Society. Ajith, who is a participant in the EU-India project, works in the Informatics division.

The division IT in Society deals with general public especially, senior citizens and parents, to educate and inform them about the new online technology. The division focuses on senior citizens who do not have the background on the technological development. So the institute invites them and teaches them how it works, what are the features, what are the merits, what are the demerits. The IT in Society division was founded in 1999 and it is through this division that the EU-India Cross-Cultural Innovation Network programme was introduced in Delhi University.

Arun, Indian coordinator of the EU-India Cross-Cultural Innovation Network project, who had been the Director of NISTADS, joined the institute and he had brought this project with him to the Institute of Informatics and Communication. He is also the Honorary director of this institute. It is through Arun that Ajith was introduced to the EU-India project and Joe from the University of Brighton.

Ajith and Arun have access to the Internet services through their university network system and the web, which they access via their personal computers on their desks. From early last year (2002), both Arun and Ajith have got email accounts provided by the Institute and the servers have become more stable enabling the Institute to introduce web-based approaches to teaching and learning. The Institute has set up discussion forums and news groups for the students.
1.4.4.5 National Institute of Science Technology And Development Studies (NISTANDS)

- **Status**: Publicly funded Research Institution
- **Participants**:
  - Raja, Director of NISTADS
  - Kalyani, Senior Researcher

NISTADS is one of thirty-nine research institutes in India set up by the India's Council of Scientific and Industrial Research (CSIR), New Delhi. The aim of the institution is "to study various aspects of interaction among science, society and state" (NISTADS web site). The institute enrolls students to carry out research, which leads to Doctoral degrees conferred by various universities in the country. It also has a visiting scholars scheme to encourage national and international researchers to participate in the institution's activities. Research carried out in the institution has a direct impact on policy making. The participants from the research institution explained that rural development is an important part of Council of Scientific and Industrial Research (CSIR). The Government of India saw CSIR as a vehicle for India's industrialization and this was seen as the social context for the rural development. The research institution set up twenty years ago, links research institutions to the state although it does not see itself as a hard core science institute or a laboratory. However, NISTADS sees itself as a bridge between the hard core scientific laboratories and society.

The Institution is made up of forty-seven members. It comprises academics from a range of disciplines such as science, engineering and social sciences. It has a Director as the head of the Institution. The funds for research activity are allocated according to various projects as the Institution's research board sees fit. The director has the power to decide how the funds are spent and who should be involved. It has senior and junior researchers from different fields of expertise.

Kalyani and Raja have access to the institutes network services and the web through their personal computers in their offices.

1.5 Road Map

This chapter presented a brief account of the gaps in the studies carried out in the areas of collaboration, computer supported cooperative work and cross-cultural issues, that have emerged as the major three themes in the cases identified for study. It also presented the research question to be addressed in the study presented in this thesis. Furthermore an account of the framework within which these cases have emerged and have been studied. This included the various online
technological environments introduced to facilitate collaboration. The chapter also listed the research activities undertaken in the programme, from which the cases for the study were identified. Finally a brief introduction to the case study participants' institutions was also given.

The next chapter, Studies in Computer Mediated Cross-Cultural Collaboration, presents a review of the literature on the areas of Cross-Cultural Studies, Computer Mediated Communication and Computer Supported Cooperative Work and Activity Theory as a theoretical framework for collaboration of academics in a cross-cultural environment. The section on Activity Theory maps the development of the theory from the Vygotskian (1978) model for activity to Michael Cole's (1988; 1998) interactive activity model for cross-cultural research. Here it is argued how this interactive model can be used to model collaborative activity in a cross-cultural collaboration. Chapter 3 addresses the case study method within the grounded theory approach as the methodology adopted for the study. A qualitative approach and the case study method are used for this study and grounded theory is used to analyse the data gathered. The interacting activity systems model proposed by Michael Cole (1998) for cross-cultural research is presented as the framework for the study. This chapter also includes brief descriptions of the cases selected for study and discussion on my role as a member of the EU-India programme and a researcher. It also presents the difficulties encountered in the study and the limitations of the study. Chapter 4 presents the first case study, the Floriculture Project. The case studies of the Computer Science, Bankura and Dairy projects are presented in Chapters 5, 6 and 7 respectively. The case studies are presented here as narratives. Chapter 8 presents and discusses the themes of analysis identified from the cases. The synthesis of the identified factors with the theory follows the discussion of the themes. Chapter 9 discusses the limitations of the activity systems model developed for cross-cultural research to the study of cross-cultural collaborative activity and proposes a model, which would enable cross-cultural collaborative activity to be mapped and studied. Chapter 10 presents my reflection on a number of issues that have impacted and shaped the study and some of the lessons learned. Chapter 11 presents the conclusions to the study and future directions for research.
CHAPTER 2. STUDIES IN COMPUTER MEDIATED CROSS-CULTURAL COLLABORATION

2.1 Introduction
Collaboration is being viewed as an important mechanism in the time of globalization. From educational contexts to business organizations collaboration is being employed one way or another to share knowledge and extend skills. Since the introduction of network technology, collaborative ventures have extended beyond the confines of offices and institutes to a wider world across organizations, cultures, time and distance.

In this chapter I will discuss some of the studies carried out in the areas of cross-culture, computer supported collaborative work and Activity Theory. Although I have taken an inductive approach to my study, a number of issues raised in these studies have guided me in my approach to the study of academic collaboration in a cross-cultural environment.

A lot of studies, in the area of cross-cultural issues have been carried out in the domain of business management where companies and firms from different countries have been compared and contrasted. These studies have addressed the social and cultural aspects that influence work in various countries. Studies have also been carried out on the cross-cultural collaboration in academic research teams. These studies have addressed, not only the social and cultural but also the psychological aspects of cross-cultural collaboration. I also present studies carried out in cross-cultural communication. In section 2.2 I discuss some of the studies carried out in the area of cross-culture. Sections 2.2.1 addresses the cross-cultural comparative studies; 2.2.2 the cross-cultural collaborative studies and 2.2.3 the cross-cultural communication studies.

Section 2.3 discusses a number of studies that have defined and characterized collaboration. The social and the psychological aspects of arriving at and maintaining collaboration are also addressed. In section 2.4, I present studies carried out to address the technological impact on collaboration. Section 2.4.1 I discuss studies that have been undertaken to address the potential and limitations of computer mediated communication. Section 2.4.2 discusses the studies carried out in the area of computer supported collaborative/cooperative work. These studies present the potential and limitation of computers to support collaborative work. Section 2.4.2.1 discusses the role of the facilitator and relationship building in virtual teams. Section 2.4.2.1 takes Activity Theory as a framework to identify and analyze the issues for designing computer support for collaborative work.
In section 2.5 a brief discussion on the developmental stages of Activity Theory is presented - 2.5.1 Individual action to Collective activity and 2.5.2 Cultural sensitivity. Section 2.6 draws the discussions together.

2.2 Cross-cultural studies

Culture is defined as a set of historically evolved learned values and attitudes and meanings shared by the members of a given community that influences their material and non-material way of life. Members of the community learn these shared characteristics through different stages of the socialization processes of their lives in institutions, such as family, religion, formal education and society as a whole (Tayeb, M.H. 1988 p: 42).

As more and more interest is being shown towards international cooperation, understanding of various cultures has become an important issue. In the area of cross-culture, comparative studies have been carried out addressing business ethics (Hisrich, R D et al. 2003), gender issues (Omar, A and Davidson, M J 2001; Simeon, R et al. 2001) and work related values in organizations (Hofstede, G. 1991; Hofstede, G. 2001). Most of these comparative studies have been based on dimensions identified by Hofstede (1991; 2001) in his study of a multinational company in fifty countries. Only a few studies have addressed the issue of collaboration in a cross-cultural environment. In the comparative studies, researchers have addressed various cultural contexts in rather adversarial terms while in the cross-cultural studies, researchers have addressed these contexts in a collaborative perspective.

2.2.1 Cross-cultural Comparative study

Cross-cultural studies addressing the influence of different cultures on work have been carried out in the area of business management. Hofstede (2001) studying organizations across approximately fifty countries discusses the impact of the national cultures upon the organizations and how they function. He identifies five dimensions - power distance, uncertainty avoidance, individualism, masculinity, long-term vs. short-term orientation - as the axes against which a multinational business organization is studied in different countries. Furthermore he addresses the organizational culture within a country where practices differ from one organization to another. Hofstede draws attention to cultural relativism and points out that cultural relativism calls

"for one to suspend judgement, when dealing with groups or societies different from one’s own. One should think twice before applying the norms of a given person, group or society to another. Information about the nature of cultural differences between societies, their roots and their consequences, should precede judgement and action" (Hofstede, G. 2001 p: 15)

However, Tayeb (1988) points out that Hofstede’s (Hofstede, G. 2001) study fails to address the relationships between the identified dimension and the attitudes and structures of the participating manager from the organizations. Extending Hofstede’s study, Tayeb carried out a comparative
study between organizations in India and England to explore the social and cultural impact on organizational work related values and the attitudes of employees, organizational structures and management systems. In this study, among her findings, she identified that Indians have more respect for, fear of and obedience to their seniors and people in power compared to the English. Furthermore the English were more willing to interact and communicate with their bosses, colleagues and subordinates in order to discuss issues pertaining to work than the Indians. Moreover, unlike the English the Indians preferred the managers to give them specific instructions and information required to complete the task at hand.

With the arrival of information technology, a number of studies (Kambayashi, N. and Scarbrough, H. 2001; Veiga, J F et al. 2001) have addressed how organizations have been disposed towards this new medium and the influence of national cultures on its use. Kambayashi and Scarbrough (2001), discuss the cultural influence on the use of information technology by factory managers in the UK and Japan. In this study the authors use two key dimensions; the control-oriented IT use and individual-oriented IT use by managers in one thousand and four hundred firms in the UK and Japan. They conclude that Japanese factories have low preference on working as a team and working on fixed jobs while a high preference on “individualized information transfer” (p: 229) compared to the British factories. It is also reported that factors such as, “accessibility of strategic information, liaison as the main job, communicating instruction as the most important role and the need to report major problems to senior managers” (p: 229) as few of the characteristics of control-oriented IT use. It is argued that these characteristics of control-oriented IT use is higher among Japanese factories than the British. Through this study they confirm Hofstede’s (2001) national cultural dimension claim that the high uncertainty avoidance and power distance culture prevails in the Japanese firms.

Approaches to studying cross-cultural scenarios have been discussed and proposed by a number of studies from management research (Easterby-Smith, M. and Malina, D. 1999) to cultural psychology (Griffin, P and Cole, M 1984; Cole, M. 1988; Cole, M. 1999). Researchers have tended to apply methodological approaches, which have been designed to study a scenario in one culture to the study of another. Taking the sociohistorical tradition of activity (Leont’ev, A.N. 1978) where activity is seen as the minimum unit of analysis, Cole (1988) argues that the culture plays a vital role in mediating human development and argues for a culturally sensitive approach to studying scenarios across cultures. He discusses the difference between the Russian and the American approaches to studying human development across cultures. Referring to the study carried out on
the historical development of cognitive functions by Vygotsky and Luria (cited in Cole, M. 1988) in a rural location in Uzbekistan and Krighizia, Cole identifies the limitation to their approach to the study. He argues that Luria had introduced “distinctly Western European activity systems” (p: 143) which were psychological tests and interviews. Consequently, it is argued that it failed to recognize the local reality, the activity systems of the Uzbek and Kazai people. Cole also points out that, in this study Luria failed to restrict his findings to a particular domain. In order to redress this, Cole and his colleagues carried out studies on Kpelle people in Liberia from which they concluded that “cultural difference in cognition reside more in the context within which cognitive processes manifest themselves than in the existence in a particular process (such as logical memory or theoretical responses to syllogisms) in one culture and its absence in another” (p: 147). Consequently, it is argued that the cultural context has to be taken into account, when studying human development across cultures, as cognition is tied to the cultural context where the cognitive process has originated.

Discussing tool mediation, Cole points out that the Sociohistorical School fails to recognize that there cannot be a universal context free tool. Tools embody the rationale of the activity that they have been designed for and the rational of the users. It is also argued that context-boundedness of cognition is linked to the historical process of the structuring of the context. Hence it is argued that the tools would carry the culture of what and whom the tool has been created for. The issue raised by Michael Cole about the tool being context-bound is important when viewing on-line technologies. As these technologies were designed with the Anglo-American user in mind with Roman typesets- with regards to text based communication- this technology limits the use of it by non-Roman typeset user. Those languages which use roman typesets dominate the language of communication through this medium. As a result those who speak a language which does not have a roman typeset have to learn a language which is based on such a type-set. Consequently, the culture that the language carries would have to be adopted to use the language effectively for communication. This in turn would limit the ability of the non-roman script language speakers’ communication skills in this environment as their natural communication skills will be restricted by the new culture of language in use and cognitive burden of conveying the necessary message in a different language.

The above comparative studies have addressed the cultural and organizational impact on the participants working in business organizations. Issues regarding approaches to studying scenarios across cultures have also been discussed. However these fail to address how companies across
national and organizational cultures interact and collaborate. Nevertheless, studies have been carried out among academics on the issues of interaction and collaboration across cultures.

2.2.2 Cross-cultural Collaborative Study
Difficulties faced by the researchers in cross-cultural research teams have been addressed by Teagarden et al. (1995) and Easterby-Smith and Malina (1999). Teagarden et al. (1995) carried out a study on human resource management practices across ten countries. In their study they address the process of research where researchers collaborated across eighteen countries. Here they identified that it was important to have personal contacts, though the importance of it might vary from country to country, to gain access to the companies identified for study. Furthermore they argue that shared understanding and objectives would help researchers to utilize the different levels of skills and knowledge in their teams. Contrasting with this, Easterby-Smith and Malina (1999) point out that it is difficult to have a common understanding when the researchers hold varying views about knowledge and how the data should be interpreted.

Both Hofstede (2001) and Tayeb (1988) carried out nomothetic studies on the management of relationships in organizations while Easterby-Smith and Malina (1999) argue that idiographic study would highlight the issues that nomothetic studies fail to do. Based on this they present an idiographic study on cross-cultural collaborative research. The study addresses decision-making processes in similar organizations in the United Kingdom and China, as there were concerns about the quality of the business relationships between these two countries. This study also addresses the limitations of the methodology used for cross-cultural studies and proposes reflexivity as an approach. Teams of academics from China and United Kingdom conducted case studies where each team had academics from each country, enabling researchers to take the roles as insider and outsider. The study identifies the importance of trust and good communication between team members, power and politics within the cross-cultural teams, recognition of the different cultural and academic traditions between cultures and their impact on the research. The authors found that it was difficult for the research teams to get access to companies in the UK compared to the companies in China, as the Chinese academics had good personal networks built with their former students who were managers in the target companies. Furthermore, in regards to products of the collaboration, the UK researchers were working towards publishing theoretical work in journals while the Chinese were interested in the implementation of the theoretical observation in a Chinese context.
McLaughlin and Ponte (1997) explore the emotional aspect of cross-cultural collaboration. The authors refer to two projects carried out where one was between academics from the UK and the Netherlands while the other involved higher educational institutes from the Netherlands, Russia, USA and the UK. The authors present four closely interrelated dimensions identified in this study: “the personal, the relational, the cognitive and the professional” (p: 104) It is argued that in collaboration one needs to address not just the professional side of the person but the whole person. In the personal domain they argue that personal commitment and engagement is important since it is emotionally challenging to deal in a situation where assumptions are brought into question. In the relational domain they identify the negotiation and collaboration styles between different cultures. They identify the characteristics of negotiating styles in this environment as “direct vs. indirect, the metaphorical, the pragmatic, the contemplative, and the questioning”. Furthermore they identify power and gender differences and their impact on collaboration. McLaughlin and Ponte (1997) citing Tuckman’s stages of group development, forming and norming, storming, performance and ending, argue that these stages can be seen in this cross-cultural collaboration. In the forming and norming stage, the participants are trying to establish shared ideas and goals, where the “participants tend to be very focused on an egocentric view - what does this collaboration mean to me? What can I get out of this?” (p: 109). While it is pointed out that the storming stage is the most emotionally uncomfortable as participants need to reshape their assumptions and collaboration can make this worse. They argue that if this stage is not supported then it could be overwhelming for the participants and they would be stuck in the uncertainty stage of forming and norming with their egocentric view.

Presenting three vignettes of collaboration between academics and practitioners, Amabile et al. (2001) point out that in the area of collaborative team characteristics, the difference in problem solving-styles had a negative effect on the process. Furthermore, the team activity was influenced by the communication of the team management leader and the process conflict was attributed to the cultural difference between academics and practitioners. In the area of the collaborative environment characteristics, the authors report that institutional support for the collaborators were highly featured in the study. With regards to collaborative process characteristics, it is pointed out that the “frequent meetings, well planned in advance, appeared to facilitate the functioning of the IRG (Innovation Research Group) and the success of its project” (p: 429). The authors argue that frequent well-planned in advance meetings are important for geographically dispersed collaborations. Conflict resolution process is also seen as playing an important role in this cross professional collaboration. It is argued that, task conflict over ideas has a positive impact on the
progress of a project while conflict over roles and responsibility has a negative impact. From this study, Amabile et al. (2001) present a model for cross professional collaboration which includes the determinants of successful collaboration and the outcomes of the success. They argue that "the determinants should include three broad categories: collaborative team characteristics (project relevant skill and knowledge, collaboration skill and attitudes and motivation), collaborative environment characteristics and collaboration process. The outcomes should include project progress, team functioning and benefits to individual team members" (p: 429).

The above studies have addressed cross-cultural and cross professional collaboration identifying social and psychological factors that affect collaborative activities in these environments. However the studies do not address the communication aspect which is vital for any activity, let alone for an activity in a cross-cultural environment. Sharples et al. (1993) referring to collaborative writing points out that:

"Collaborative writing requires effective communication between group members to establish a shared understanding of the task and the group product. (p: 20)."

If this is said about collaboration in a monocultural environment, the importance of communication for cross-cultural collaboration cannot be overstressed.

2.2.3 Cross-cultural communication
Aspects of cross-cultural communication have been addressed in a few studies (Brislin, R.W. 1981; Clyne, M 1996; Kakabadse, N K et al. 2001). Kakabadse et al. (2001) argue for an integration of various theories that have addressed communication and behavior patterns of members from Anglo-Saxon and non-Anglo-Saxon cultures. Discussing Hall's (1976) model of cultural dimensions-low-context and high-context systems- the authors point out, that according to Hall, "context that surrounds information is critical to meaning, therefore relevant information must exist in any interaction to specify meaning" (p: 06). In the low-context system, a large amount of information is explicit to the participants to ascertain meaning while in a high-context system the large amount of information is implicit. "In low-context communication the listener knows very little and must be told practically everything. In high-context communication the listener is already "contextualised" and so does not need to be given much background information" (Hall and Hall 1990 p: 184 in Kakabadse N K et al. 2001). The high-context people feel there is no need to be specific as they expect the listener to understand what they are talking about. The authors point out, that the high-context people will generally be talking around the point and the information to understand the
point is already in place in the communication. Consequently, they argue that the tone and non-verbal cues are important for high-context cultures to communicate. It is also pointed out that

"High-context communication requires far more time because trust, friends and family relationships, personal needs and situations will also be considered. In low-context cultures, actors seldom take the time in business dealings to build relationships and establish trust; rather, if, the culture does not work out, actors simply break off the relationship and if he/she feels seriously aggrieved, will actually sue the other party" (p: 07).

Kakabadse et al. (2001) argue that the dimensions identified by Glenn (1981) "associative vs. abstractive", Servaes’s (1989) “Western-Aristotelian vs. Asiatic-Platonist”, Hall’s (1976) “low-context cultures vs. high-context cultures” and Hofstede’s (1980) “individualism vs. collectivism” are linked and encompass behavioral and cognitive aspects in addressing cultural issues. There seems to be a relationship across these different pairs of dimensions. For instance, Associative, Western-Aristotelian, low-context cultures and individualism relate to each other, similarly the abstractive, Asiatic-Platonist, high-context cultures and collectivism.

While discussing how working across different cultures affects cross-cultural communication, Frazee (1998) points out that Americans when working with Indians need to understand the different perspectives of their approaches to work. Citing Ferrante, the author points out two core values which seem to influence work for the Indians—“1) a close connection to their families and 2) a high regard for their social relationships and status in society"(web page). This, the author explains, according to Ferrante “are absolutely paramount- above and beyond work.” Frazee (1998) stresses that "Indians work to support their families and to improve their status economically and socially. They don’t tend to work to fulfill career goals, to meet corporate objectives or for personal recognition” (web page).

If high-context cultures provide a large amount of information to communicate a point, as discussed by Kakabadse et al. (2001), there is a pressing need to study the use of on-line technology for cross-cultural communication. The above authors point out, that tone and non-verbal cues seem to play a vital role for communication in high-context cultures. This would lead to stressing the importance of studying the attitude and use of emails—the most accessible text based communication medium- by collectivist cultures.

2.3 **Collaboration**

Collaborations have their own brand of simple flirtations and deep abiding commitments. No passivity here; like a romantic couple, collaborators are constantly reacting and responding to each other. Frequency of contact becomes almost as important as the nature of the contact. The collaboration becomes an entity unto itself (Schrage, M. 1990 p: 36).
In the area of learning, collaboration has been taken as a move away from behaviourist learning approaches to the recognition that learning is inherently a social activity (Vygotsky, L.S. 1978; Bruner, J 1986) where interaction and communication with a capable peer or teacher would lead to a better understanding of the problem at hand and the ways of arriving at a solution. Collaboration in the area of work, it is argued, would enable members from varying skills and knowledge specialization to work together to solve a problem (Schrage, M. 1990). Sharples (1993) points out the pressures put on the need to collaborate:

The growth of interdisciplinary studies, of international research projects, of team-based news reporting, of distributed work groups within large companies, of consortia to carry out pre-competitive product development, have all exerted political and organizational pressures on writers to be seen to be collaborating (p: 03).

Michael Schrage (1990) discussing the purpose of collaboration, points out that the “very heart of collaboration is a desire or need to

- solve a problem
- create or
- discover something
within a set of constraints (p: 36)"

The constraints for collaboration are identified as expertise, time, money, competition and conventional wisdom. He goes on to explain these constraints:

- **expertise**- one person alone doesn’t know enough to deal with the situation;
- **time**- collaboration is a real-time effort in an airplane cockpit or an operating theatre, a more leisurely process in the arts and sciences;
- **money**- budgets matter in both business and top-flight scientific research;
- **competition**- in science or business, others may threaten to beat a collaborative team to publication or to the market place;
- **conventional wisdom**- the prejudices of the day (Schrage, M. 1990 p:36)

It is also argued that collaboration cannot be predictable and does not follow a routine, which makes collaboration an ideal mechanism for exploring the unknown. These being the reasons for collaborating, Kaye (1995) explains:

For effective collaboration and cooperation to occur, there needs to be real interdependence between group members in accomplishing a task, a commitment to help, a sense of responsibility for the group and its goals, and attention given to social and interpersonal skills in the development of group processes (p: 194).

Schrage (1990 in chapter 11) points out that there is no recipe for successful collaboration, however he identifies a few aspects that he sees would contribute to a successful collaboration. It is argued that it is essential that the group members are competent to deal with the problem at hand. Schrage
points out that a shared, understood goal of the activity is an important aspect in collaboration, as “a collaboration is not described in terms of the relationship but in terms of the objective to be achieved” (p: 152). The participants in a collaborative activity, it is argued, should have respect for each other, be tolerant of their colleagues’ habits and have to trust their group members. Furthermore, he argues that the collaborative group should set up shared spaces as it is seen as a “partner in collaboration... and serve as both model and map for what the collaborators are trying to achieve” (p: 154). Multiple forms of representation are used to address the problem at hand and these representations can be manipulated to explore and extend the difficulties encountered over using only the written language for expression. Communication, which is seen as a vital part of the collaborative activity, is expected to be “continuous but not continual” (p: 156). It is argued that collaborators would set up a communication pattern that would suit their relationship and the task at hand. “Successful collaborators try to create an appropriate flow of communication rather than a structure for communication” (p: 156). Schrage points out that, these communications can take place in formal and informal environments hence, it is important to recognize this and provide different environments where this could be achieved. For Schrage, in collaboration the participants, while having explicit roles, are free to take up other roles as required by the ever developing collaboration and the related tasks. He also points out that when it comes to decision making in a collaborative activity, unlike popular beliefs there need not be a consensus. Furthermore, he argues that it is not necessary to have physical presence for successful collaboration and the collaborators do not necessarily focus their attention inward but are always looking for input and influence from outside their collaborative group. Finally, Schrage stresses the need for the collaborators to recognize that the collaboration would have an end, as it is task oriented. The participants in the collaboration would develop other interests and would move on to new collaborations.

Schrage has presented the need for collaboration and the constraints of collaboration and has identified the factors for successful collaboration. However he does not address the process of arriving at and maintaining a collaborative activity and the aspects that would impact upon this process. Unlike Schrage who argues that physical presence is not necessary for successful collaboration the study carried out by Kraut et al. (1990) discusses the influence of physical proximity and the forming and maintaining of relationships (Kraut, R et al. 1987) in collaborative scientific communities. Here they identify the reasons for collaboration as: pooling both material and intellectual resources, to change the research process to a desirable way of work, it being exciting to work with others rather than alone, improved quality of the research product, to maintain pre-established personal relationships and in some cases, collaboration for “self presentational or
political reasons". The study carried out on patterns of contact and communication, Kraut et al. (1990) addresses the importance of physical proximity for forming and maintaining collaborative group. They argue that

the process of selecting a research partner is in many ways analogous to the process of choosing a mate with combination of mutual benefit, personal and intellectual compatibility and the ease of contact all influencing whether a pair of potential partners decide to work together (p: 155).

Although the academics wanted to collaborate, the authors claim that the "collaborative research style did not lead to greater overall productivity". In addition, it is pointed out that the psychologists who were studied rated solo-authored articles more highly than the collaborative ones. Addressing the issues that impact upon research collaboration among academics, it is argued that there is a close link between proximity and research collaboration. It is also pointed out that even when the issue of proximity is not present, research collaboration can be borne out of similarities in research interest. The authors identify informal communication and frequency of communication as vital for forming and maintaining the collaborative activity. Moreover, it is argued that physical proximity is strongly related to the frequency and increases the quality of communication.

Kraut et al. (1987) also address the problems faced in forming and maintaining relationships and the tasks researchers need to complete for a successful collaboration. It is argued, that

- to start a research collaboration, potential collaborators must become acquainted with each other, identify their common interests and the mutual benefits that might come from working together, become committed to working together and establish preliminary agenda and division of labour (p: 36).

The attempt to find a partner for collaboration can take place through a number of mechanisms: physical proximity, institutional norms, conferences and workshops, and own initiative. The authors identified approaches through which the participants arrived to commit to collaboration. The first approach was informal interaction leading to a commitment to collaboration and the second was where one of the partners proposed collaboration that was accepted by the other. The third approach was when a higher status person suggested that two people, for whom he is responsible, work together.

In project development and planning, the authors identify two methods. In the first both the research question and the project plan were developed through interaction and communication and in the second, one participant presented his idea and the others critiqued it and arrived at the question that they wanted to investigate.
Kaye (1993) presenting studies on academic collaboration in developing distance education courses, argues that social, psychological and institutional aspects play a vital role in the success of the collaboration. Kaye (1993), citing Riley (1983) argues that the individual's underlying intentions, which are identified as private and public factors, are important for the development and success of the collaborative activity. Among these factors the one that is stressed is the individual's beliefs, the personality and in instances where there is a chairperson for an activity then the experience of the chairperson. Individuals' beliefs as to what they want to do in the course seem to coincide with the nature of the reaction to their colleagues' drafts and this also affects how each writer reacts to the comments made by their colleagues on their work. Experience, leadership style, personality, level of efficiency and the temperament of the course chair were also seen as crucial for the success of the course preparation process. It is argued that the above private factors, which have not been addressed before, are fundamentally important for successful course development. Private factors such as the individual's personal commitment to the course and the quality and nature of the interactions among team members are also seen as vital issues for the success of the collaborative activity. It is pointed out that the course team process can be a failure if these private factors are not addressed. The issue of private factors has been raised in other studies (Murphy, K L 1991; Fisher, K et al. 2000; Hughes, S C et al. 2002) as well. It is argued that failure to address this may result in anxieties, which might lead to confrontations and misunderstandings.

In the same study, Kaye (1993) citing Brooks (1982), states that although division of labour may increase productivity, when complex tasks are shared among a group of people, the extra activity of co-ordinating and communication can impede that very productivity. There can be instances where problems can arise from the social psychology of the process. Furthermore he points out that the issue of having to confine to a group may affect the participants' efforts since they might feel less responsible and lack ownership of the task at hand.

Amabile et al. (2001) studied academic-practitioner collaboration to illustrate the three determinants identified through the literature. The determinants for successful collaboration were- collaborative team characteristics, collaboration environment characteristics, collaboration process and collaboration outcome. The collaborative team characteristics, as the above authors have argued, are presented as project-relevant skill and knowledge, collaboration skill and attitudes and motivation. In collaboration environment characteristics the authors argue that only few researchers have addressed "the effects of institutional contexts surrounding the collaborators from different organizations despite the potential importance of context in determining collaborative success".
They also point out that in academic practitioner collaboration "the degree of support that an individual receives from his or her home institution could influence the time and resources available to a project" (p: 420).

2.4 Technology and Collaboration

In the area of computer supported cooperative /collaborative work, the focus has been on the technological, social and psychological aspects of using technology. The use of technology for collaborative work has led to studies, which address the effectiveness of various synchronised and asynchronised communication technologies.

With the advent of network technology, the idea of collaboration has moved into a new territory where researchers have carried out studies in areas such as collaborative learning/teaching, (Brammerts, H 1996; Warschauer, M 1996; Collis, B and Smith, C 1997; Debski, R 1997; Dornyei, Z 1997), collaborative knowledge management, (Malhotre 1997), collaborative writing (Kaye, A.R. 1993; Sharples, M., Goodlet, J.S., Beck, E.E. et al. 1993), collaborative designing (Gay and Lentitni 1995) and collaborative technology (Caviedes 1998), to highlight how technology might support collaborative activity.

2.4.1 Computer mediated communication

On-line technology can be divided into synchronised and asynchronised communication modes. The real-time interaction and communication technology such as chat, audio and video conferencing is the synchronised communication channels. While the delayed-time interaction technology such as emails and computer conferencing are the asynchronised communication mediums. Synchronised and asynchronised communication modes are seen to have distinct roles in technology-mediated interaction and communication. Synchronised communication has the ability to build shared understanding whereas asynchronised communication is seen as a mode for exchanging information. As Mulder et al. (2002) point out "synchronous settings are more suitable for reaching a shared understanding (convergence), whereas asynchronous settings are better for exchanging information (conveyance)" (p: 35). It is also argued that collaborative activity in a work or learning environment needs to be supported by both synchronized and asynchronised modes of interaction because of the distinct roles played by these modes.

Walsh et al. (2000) argue that computer mediated communication (CMC) is central to scientific work. It is argued that scientists use emails and there are differences in the use of emails across different fields. Walsh et al. report that mathematicians and physicists have the highest use of
emails for their professional tasks compared to biologists and sociologists. A similar scores can also be seen on the use of emails for research related use. With regards to gender difference, the authors point out, that there was no significant difference in email use. Addressing the effectiveness of email use in professional and research related issues, it is reported that the respondents perceived that email use has led to increased contact between, and awareness of, scholars and professionals outside of their institutes. Email use was also seen to have increased access to information about professional conferences and academic productivity. The authors point out that "one of the biggest effects of CMC has been the growth of collaboration" (p: 1296). They concede that this growth cannot be attributed to the use of CMC alone but that its use enabled more (especially remote) collaboration to be carried out.

Gay and Lentitni (1995) conducted an exploratory study on the use of a prototype networked collaborative design environment to facilitate learning about engineering design. They point out that "conversations are the means by which people collaboratively construct beliefs and meanings as well as state their difference. Therefore, one of the major issues facing designers of communication systems concerns helping one person or group understand others and create and maintain common ground". The study specifically looked at the use of communication resources to increase activities in three-way group collaboration. They examined how the students have used the communication resource in various activities to increase the depth and breadth of communication and to overcome any technical difficulties that they may have encountered. The exploratory study was undertaken where three groups of students at geographically distinct locations were asked to solve an engineering design problem using a prototype Computer Supported Collaborative Working (CSCW) system. The CSCW system had multiple communication technologies and a multimedia database. The students were left to identify and negotiate their task boundaries. They were also given materials to construct their design.

The study concludes that there was a correlation between use of two or more communication tools, collaboration and the progress on their work. The authors also point out that the social and psychological aspects of using on-line resources and collaboration should be addressed. It is also pointed out that to build such systems it is important to monitor the individual, social and cultural forces at work when a user interacts with the systems. Furthermore it is said that users need training in information seeking and communication to use the system effectively. Since there was a time constraint, two hours to design the windmill, the effectiveness of using multi channels for designing products over a longer period is not known.
Rafaeli and Sudweeks (1997) argue that the success of the sustainability of computer mediated groups may reside in the issue of interactivity. They argue that interactivity has a role in attracting people to networks and generating growth. Because interactivity is a "cause in the social dynamics of group communication" (web page). Interactivity is also seen as the mediating phenomenon. The hypothesis that has come out of the study is that "less interactive uses of the net are not likely to see stable membership" (web page). Working groups of academics have to grapple with more than interactivity for sustainability of the groups. Researchers have discussed not only the technical part of using network computers for a group working but also the human factors that influence such collaboration.

In the above study, the main idea was to address use of computer mediated communication across different domains. There seems to be an implicit assumption that all scientists use email because they have access to it. The study carried out by Mitra et al. (1999) discusses the relationship between expectations, attitudes and email use among university members. To start with the authors make a distinction between access and use of emails. It is explained:

"Here the distinction between use and accepted becomes especially critical. While it might have been accepted that email is part of the emerging pedagogic systems, the actual use of e-mail is perhaps lagging behind" (web).

Mitra et al. (1999) argue that email use is not necessarily universal, particularly in the context of university wide implementation of computer mediated communication. It is pointed out that the frequent users of emails with their students were those who perceived that it would have positive impact on the instructional process. They also identified that the faculty who used emails among their colleagues were also disposed to using emails with their students. This they argue shows that there is "certainly an element of customary work pattern that is related to computer use, where the usage level is related to the existing 'habit' of computer use" (web page).

The study also tries to map the profile of the email user and non-users. This is based on a "set of attitudinal items and some demographic and technographic characteristics" (1999). The users of emails seem to have joined the university recently and are young. These users, it is pointed out, have been exposed to the use of computers and evaluate themselves as competent users of computers. The non-users are recorded among older faculty members who have been in the university for a long time and have developed their own pedagogic systems. These faculty members were also seen to evaluate themselves as not confident in using computers. Through this study Mitra
et al. stress that availability of a technology does not guarantee its use. It is explained that the advantage of the system needs to be clear to the users and these advantages also have to relate to “communication functionality of the technology”. The idea that accessibility to technology would not necessarily lead to its use is acknowledged by Kaye (1993)

“Even when there is an agreed group task to be performed and appropriate technological infrastructure to help in planning and collaboration tasks is readily available, there is no guarantee that technology will be used by the target users (p: 56).

It has been suggested that a group working from different locations can benefit from network computers. Kaye (1993) points out that wherever academics have used electronic publishing and emails, the roles and responsibilities of the editors have been reformulated. It is argued that the most preferred groupware for collaborative work, is the asynchronized modes with periodic face-to-face meetings since it gives the participants opportunity to work at their own pace and time, enabling them to reflect on the issues at hand before responding.

Mitra et al. (1999) also point out that studies that have addressed email use, have made assumptions that the technology use is “voluntary” although a lot of the time it has been a requirement. This situation seems to prevail in most universities where the participants are provided with a certain technology and are expected to use it. Consequently, in cross-cultural communication or collaboration firstly the “required” technology used might be different to each university, making academic communication and collaboration difficult. It becomes increasingly difficult when during cross-cultural collaboration and communication a particular technology is identified as the mode of communication but it is not the preferred mode for some members in the group. This situation would make the use of that technology a “requirement” for some while it would be the preferred means for others, consequently affecting the communication and collaborative activity.

Ishii (1990) drawing attention to the need to design groupware to support inter-cultural collaboration, points out that the computer mediated communication systems for group decisions would be used differently by the Japanese and the Americans. In group decision support systems, which have public and private communication systems, the Americans would conduct their discussion in public while the Japanese would conduct it in “nemawashi” (web). He explains “nemawashi” as involving all the group members by presenting the plan and getting their feedback and consensus. This is carried out in private and once the consensus is arrived at then the decision would be presented in public. This process is followed even when the end product may not have the consensus. The author also points out that the Japanese do not like to debate over issues, find it
difficult to criticize others' ideas, and they wait for people to draw them out to give their view. With regards to using on-line technology for communication, Ishii (1990) argues that, non-native speakers in a cross-cultural environment find it easier to communicate using email than any real time communication as it allows them to take the time needed to understand and respond without the time pressures of real time communication. Some argue that it is important to have real time or synchronised communication along with the asynchronised communications as the time delay in asynchronised communication can affect the momentum the participants feel in the activity (Mulder, et al. 2002).

The above studies have addressed the use of on-line technology and its up take by the academic community. Although Ishii (1990) raises the issue of the need to take into account the cross-cultural elements for the design of groupwares, few studies have addressed the use of on-line technology for cross-cultural communication and/or collaboration.

2.4.2 Computer supported Cooperative / collaborative work

Sharples et al. (1993) identify four areas of research issues of computer supported collaborative writing: task issues, group issues, communication issues and external representation issues. In the task issues, one of the aspects the authors present is the strategies for coordination. They describe three types of coordination: parallel working, sequential working and reciprocal working. In parallel working the task is divided into sub-tasks where participants can work on a document or a job simultaneously and share it with each other. The sequential working is explained as when partners in the collaboration divided their tasks among them where the output of the first stage is passed on to the next person in line ready to start the next stage. "In Reciprocal working the partners work together to create a common product mutually adjusting their activities to take account of each other's contributions" (Sharples et al. 1993 p: 15). It is argued that there needs to be more research on how these strategies of partitioning are carried out.

In regards to using technology support for course team work, Kaye (1993) argues that when distributed teams cannot meet face-to-face due to cost or other difficulties, the meeting can be conducted using screen sharing services with telephone conferencing so that the participants can view the same documents while discussing. Presenting three cases to address the take up of CMC for group work by academics, Kaye (1993) explains that all the studies showed that there were clear leadership responsibilities in the group. The richness and value of the discussions depend on the role and activity of the online team manager. This, it is argued, shows that human organisation and
management is important for successful use of the on-line technology for group activity. It is also
reported that the on-line interaction and communication needs to be supported with regular face-to-
face communication. Lack of immediate response with the use of emails and asynchronous
communication, it is suggested, might lead to problems with coordination and delays in decision
making. Consequently it is argued that a clear agreement be arrived at on the use and frequency of
use of the various communication channels for the group activity. The author also explains, that

"The level of commitment of the members of a team, both to the project and the way in which the
communication technology is to be used, is obviously extremely important, particularly when
asynchronous communication channels are being used" (p: 60).

The group interaction and communication would be negatively affected if the members of the team
do not have shared expectations and behaviour patterns as to logging in and checking their emails
and contributing to the discussion group. The author points out that if there were a difference in the
take up and use of the technology by the participants, then it would diminish the value of the online
group process.

The studies above have dealt with the use of computer-mediated communication and/or ICTs for
collaborative work, networking and knowledge management within a single "cultural" group. Especially almost all the studies have looked into the issue of collaboration in a "mono culture".
Although one of the three studies "Collaborative discussions and group authoring" reported by Kaye
et al. (1993) does state that the participants came from three different countries in two continents,
but it has not attempted to address whether there were any cultural aspects that might have
influenced the collaborative activity and the use of technology. They seem to have assumed that the
collaborative process is the same among all participants. This might be due to the fact that the
participants presented the papers which were produced by them alone (not in collaboration) and the
collaboration was only at the level of discussing to edit or to develop a thought. The study fails to
address the context in which the participants are part of, assuming the online context will not be
affected by the off line context and activities. Ishii (1990) has pointed out that people work alone
and develop their own work practices which in turn would influence how they work with others.

In an online collaborative environment there are the psychological aspects of the participants that
need to be addressed. Participants need to be able to trust each other and also the medium that is
being used for the collaboration. They also need to be able to feel that they are engaged in a
stimulating and rewarding experience for the online collaboration to be effective (Hughes et al.
2002). Participants might also be reluctant to communicate or collaborate with others who have different work habits to theirs. (Ragoonadan, K and Bordeleau, P 2000)

2.4.2.1 Cross boundary computer supported collaborative work
Pauleen and Yoong (2001) carried out a study on virtual team facilitators use of information and communication technology for relationship building and maintaining with team members across boundaries. In this study the boundaries that were crossed were organizational, cultural, time and distance. It is pointed out that “success of virtual teams within organizations involve those who implement and facilitate the running of virtual teams” (p: 206). With regards to the use of technology, the authors identified that, the facilitators were aware of the fact that they would not be able to operate in virtual teams without on-line communication but they were also aware that without establishing personal relationships with the team members it would be problematic to use electronic communication channels. Emails were identified by the facilitators as the main means of communication linking the members in their virtual teams. It is pointed out that although emails were the basic communication channels, the facilitators regarded it “as a channel more suitable for communicating information and coordinating projects than for building relationships” (p: 210). The facilitators turned to the telephone as the communication channel for relationship building with their virtual team members as its use for the facilitator was second nature and she felt that they could pick up on the paralinguistic cues which could not be done over the emails. The authors also report that facilitators had set up Internet based synchronous communication systems to enable spontaneous informal conversations between the facilitators and the team members. The facilitators also selected technologies, which were more familiar to them or more accessible to their team members.

Regarding crossing organizational boundaries, the facilitators who were working across boundaries found that the significant difference that arose within the teams could be attributed to organizational culture and policies. Pauleen and Yoong (2001) present an interesting scenario from their study where the facilitator was working with a team of indigenous people of New Zealand and the government ministries dealing with land claims. Because of the cultural difference between the government ministry and the indigenous people the team interactions were affected. They report that the indigenous people had a definite preference for face-to-face communication and formal letters. Also that organizations might have a preference for a certain technology. As the authors explain on the use of technology for organizational crossing, “some facilitators may need to rely on universal channels such as email and the telephone, while organizations may need to support cross
platform and project-specific solutions in order to augment communication channels where necessary” (p: 214)

Discussing cultural and language boundary crossing, Pauleen and Yoong (2001) argue that virtual team facilitators need to take into account not only the cultural preference of communication- low and high context cultures- but also the preference for certain communication channels when deciding on the degree of relationship and strategy for building relationships in virtual teams. In addition the language used between team members and the facilitators also needs to be considered as the Chinese and Japanese in the cited cases showed aspects associated with their cultures such as respect to authority and high degree of formality. Furthermore, some facilitators felt that communicating through technology could place further barriers when communicating across cultures, as paralinguistic cues cannot be registered through text-based communications. As a result the authors stress that the facilitators have to consider the level of personal relationship needed for the working relationship to flourish and they have “to select appropriate cultural and language communication channels along with appropriate messages delivered in an appropriate manner” (p: 215).

Addressing the time and distance boundary crossing, the authors point out, that it is vital that suitable selection and use of synchronous and asynchronous communication channels be employed for the activity.

Pauleen and Yoong (2001) conclude that the facilitators should assess the conditions that might affect the selection and implementation of communication channels, the facilitators and organizations have to consider the ways in which cross boundary work could be supported, organizations need to address training and continuous support to promote “effective boundary crossing behaviours among virtual team members” (p: 217) and in cross boundary work the facilitators need to recognize the quality of content and frequency of team communication.

Herbsleb et al. (2000) studied the extent of delay in working across geographically dispersed sites and the relationship between interdependence, communication patterns and delay within and across sites. The study was carried out across four sites of a technology company developing software - one in the UK, one in Germany and two in India. The authors argue that cross site work increases delay, and the limited communication across the sites and the loss of face-to-face communication and coordination has had unfavorable results on the activity. They also report greater site
interdependence. In regards to communication preference, it is reported that when face-to-face communication was not possible, people preferred to use emails with the participant of a different language. Although it is pointed out that there were marked differences, it is also reported that the use of telephones was favorable among same language speakers. However, the authors do not specifically identify language and the media of communication preferred by the participants. Commenting on the effectiveness of communication, participants perceived that it is less likely that their remote participants would be helpful with any of their problems although they felt they were being helpful to their remote colleagues. This, the authors argue, might be because the participants who were experiencing difficulty would be able get access to help, as their local networks are larger than the one that they are involved in with the remote participants. It is also proposed that the participants might have been helpful to their remote participants but did not communicate it effectively, hence making the remote participant feeling that help was not forthcoming. From these conclusions the study draws attention to the need for collaboration tools that would support cross site collaboration and "communication tools that help convey more context and perhaps more emotional content" (p: 327).

In this study the questionnaire that was administered to the employees in India was in English while the German employees were given the questionnaire in German. As Hofstede has pointed out questionnaires administered in a non-native language to a bilingual speaker would influence the response.

Most of the above studies have addressed computer supported collaborative work within an organization. However the cultural or organizational elements were not discussed even when people from different cultures collaborated across organizations and nations. There seems to have been an assumption that the cultural and organization aspects would not have influenced the work practice of the participants. The studies that have addressed the computer supported group work across cultures have pointed out that there was preference towards certain technology for communication by certain groups. This needs to be taken into account, as communication is vital to the progress and success of any collaborative activity let alone cross-cultural collaboration.

2.4.2.2 Design issues of computer support for collaborative work
carried out to address the potential and limitations of new technologies to support learning and work and collaborative activities. Growing interest in computer support for collaborative work has lead to the design of computer environments for collaborative work. Studies (Roseman, M and Greenberg, S 1996; Karsten, H and Jones, M 1998; Cox, D. 2000) have discussed the potential and limitation of these environments for co-located as well as dispersed group work. These environments strive to incorporate facilities to support the identified elements of collaborative work. Studies have also been carried out to discuss the effectiveness of computer mediated communication for group work by comparing face-to-face and computer mediated communication channels for group decision process (Siegel, J., Dubrovsy, V., Kiesler, S. et al. 1986; Straus, S G and E, M J 1994; Straus, S G 1997; Jacob, V S and Pirkul, H 1999).

Bardram (1998) discusses the issues of work and the design of computer support for collaborative work. He argues that the domain of computer supported cooperative work has failed to address the aspects of competition, conflict and control in collaborative work. He points out:

By focusing on the positive aspects of how people carry out work together, such as cooperation, collaboration and commitment, instead of the difficult aspects such as competition, conflict and control, the field of CSCW has been criticized for being limited in its understanding of cooperative work (p: 90).

He goes on to explain that cooperation can be preplanned or spontaneous. The notion of the dynamics of cooperative work seems to be linked to the notion of breakdown in workflow. It is argued that understanding breakdowns in cooperative work would lead to a better understanding of the dynamics of cooperative work. In turn this would allow the design of strategies to recover from breakdowns.

Bardram (1998) turns to Activity Theory to theorize the dynamics of cooperative work and propose a framework for addressing them. He adopts the dynamics of collaborative work – cooperative, coordinated and co-construction - identified by Activity Theory as a hierarchical structure. It is argued that activity does not exist on any one level, as a result “the levels of co-operation co-ordination and co-construction are analytical distinctions of the same collaborative activity” (p: 92). The author points out that the core concept of hierarchical levels of an activity is the “dynamic transformation between the level” and this transformation is intrinsically bound by the stability of the activity. The author goes on to identify the dynamics of transformation between these levels as “re-flections and or breakdowns, implementations and routinization” (p: 98).
Applying this framework to a collaborative activity in a hospital, the author argues that when there is breakdown in coordination of an activity because of reflection on the objective or a simple breakdown because one of the actors could not contribute, there would be shift from the level of coordination to co-operation. When the problem has been solved it becomes routinized and coordination is reestablished. At the level of cooperation, when there is a breakdown then there is move to the level of co-construction, where the actors re-organize and re-construct their actions in relation to shared objective. Once this re-conceptualization is complete then the movement takes place from co-construct to cooperation. The author also points out that when there was a breakdown because of a conflict in the co-ordination level then it goes through the process of co-construction which in turn moves to the co-operation where all the actors co-operate in the re-organized work and the normal routine of cooperation takes place. Finally when the activity is routinized at the cooperative level it would move to the level of co-ordination.

Bardram (1998) concludes that these three levels of collaborative activity and the dynamics of the transitions between these levels need to be taken into consideration when designing computer support for collaborative work. He also points out that external intervention can be a catalyst for “development and co-construction of a working community” (p: 97). It is pointed out that designing computer support systems for particular work practices should be viewed as a co-construction of the work practice and the process of implementation and routinization needs to be taken into design consideration.

Cole (1999) taking the issues of the soviet cultural historical schools contribution of artifact mediated activity and Anglo-American cultural historical school recognition of culture as a “medium of human existence”, discusses the cultural context of the micro world and the interaction between the micro world context and the real world. In discussing the artifacts, Cole (1999) points out that

Artifacts carry within them successful adaptation of an earlier time (in the life of the individual who made them or in earlier generations) and, in this sense, combine the ideal and the material, such that in coming to adopt the artifacts provided by their culture, human beings simultaneously adopt the symbolic resources they embody (p: 90).

The author referring to Wartofsky’s three-level hierarchy of artifacts explains that the first level is referred to as “primary artifacts” which deal with direct production. The secondary artifacts are those that encompass the representations of the primary as well as the “modes of action using them”. The modes of actions are preserved and transmitted by the secondary artifacts. The third level of artifacts is seen to exist independently of the real world with its own rules and conventions.
where the outcomes are not practical. This is called the tertiary artifact. Cole uses this concept of tertiary artifact to design activities for social and cognitive development among children. Cole also uses a garden metaphor to discuss the cultural context.

The author describes the micro world designed for children:

the 5th Dimension is a specially designed cultural medium for promoting the all-around intellectual and social development of 6-to-12 year-old children while introducing them to computers and computer networks (p: 93).

He also argues that to transform this tertiary artifact into a real activity system the children need to be provided with primary and secondary artifacts. He points out that the study was to understand the interaction within and between the new environment (5th Dimension) and the institute in which is situated. The author concludes that from studying the environment in a number of different communities “the specific characteristics of interaction within a 5th Dimension depends on the nature of its institutional context” (p: 103). Furthermore, it is argued that certain institutes were not fertile enough to support a system like the micro world, which he argues led to the need to identify factors that determine the assimilation of the system in an institute.

Activity Theory as a framework for Human Computer Interaction is discussed by many researchers (Kaptelinin, 1996; Kaptelinin, 1996; Kuutti, 1996; Nardi, 1996; Kuutti, 1999). In the domain of Human Computer Interaction (HCI) research, it is being suggested that the mainstream HCI research framework is limiting (Kaptelinin, 1996; Kuutti, 1996; Nardi, 1996). Nardi (1996) discussing three theories -Activity Theory, Situated Action models and distribution cognition- which take the context of the users interaction, argues that although situated action models and distributed cognition deal with the context of the users interaction, Activity Theory is richer as it provides the tools to discuss the actor's activity. She also argues that in the case of system design it provides the framework to study the context in which users work.

Kapitelinin (1996) argues that Human Computer Interaction should have a theoretical framework, which would be able to incorporate both human beings and computer technology. He points out that the traditional approaches in the field fail to provide the ground to address issues like Computer Supported Collaborative Work and the use of computers in a cross-cultural environment. He explains that "Activity Theory is one of the concrete versions of the contextual approach"(46). He points out that Activity Theory considers computers as a special kind of tool mediating human interactions with the world. As a result, he argues that Human Computer Interaction should take into account not just the interaction between the user and the computer but also the context of the
users, other tools that are available to the user and the interactions of the user with other people. Kuutti (1996) proposes that Activity Theory can be considered as an alternative framework for HCI research and design as it addresses multilevelness, interactions in social context and development.

However, according to Kapitelinin (1996) the limitation of Activity Theory in Human Computer Interactions is that Activity Theory was developed for individual activity and the analysis of the social system is still under discussion. However, Kapitelinin agrees that there have been developments in addressing the social process. He also points out that Activity Theory has "adopted a narrow point of view of culture". Furthermore he argues that the tool mediation in Activity Theory has some limitations.

In education, Bellamy (1996) argues that there is a need to take into account the educational community as a whole and not just the learners when designing educational technology. While carrying out a study on human-computer interaction among three teams in the police force, Christiansen (1996) argues that it is important to understand the kind of activity that the participants are involved in, in order to study why they use the artefacts the way they do.

2.5 *Brief account of the development of Activity Theory*

In the following section, I will be presenting an overview of the development of Activity Theory, which originated with Vygotskian (1978) theory of mediation- dealing with individual action to Leont'ev's (1978) argument for a collective activity system. This is followed by further development of the theory, the argument for a culturally sensitive activity model for cross-cultural research proposed by Michael Cole (1988). Finally, I present how I will be adopting the interacting model to my study of collaborative academic projects in a cross-cultural context.

2.5.1 Activity Theory - Individual action to Collective activity

In this section firstly, Vygotskian (1978) theory of mediation will be explained in which activity has its roots. This will be followed by how Activity Theory was developed by Leont'ev (1978) from individual to collective activity.

Activity Theory has its roots in Vygotsky's (1978) idea of mediation. Wertsch (1985) has identified three general themes that run through Vygotsky's work:

1. a reliance on a genetic or developmental method
2. the claim that higher mental process in the individual have their origin in social processes; and
3. the claim that mental processes can be understood only if we understand the tools and signs that mediate them.

(p: 14)
He goes on to explain that these three themes are interrelated and should be taken into consideration when dealing with Vygotsky's theory. Furthermore Wertsch (1985) argues the tools and sign mediation theme precedes the other two and to understand the other two themes the notion of mediation has to be invoked. There is a lot of attention being focussed on the second of the themes since it has evolved out of the notion of a zone of proximal development.

In his study on child development, Vygotsky (1978) explains the zone of proximal development as the gap between the learner's actual development and the potential development.

The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peer (p: 86).

The same can be said of adult learning. This development is seen as a social process where the learner has to interact and collaborate with the teacher or a capable peer to move towards the potential development. Vygotsky's theory on higher mental process is influenced by Marxist theory of dialectical materialism. Any changes in society and material life will affect and bring about changes in human nature. This leads to his argument that learning and development is a social activity and he emphasises the importance of cultural and social context in learning and development. Since Vygotsky emphasizes the social side of learning some have referred to his theory as social constructivism (Oxford, R 1997; Williams, M and Burden, R L 1997) and some as socio-cultural theory (Warschauer, M. 1996)

According to Wertsch (1985) Vygotsky's concept of mediation was an "important and unique contribution". Vygotsky (1978)identifies language as the central mediating tool that mediates the Zone of Proximal Development (ZPD).

The specifically human capacity for language enables children to provide for auxiliary tools in the solution of difficult tasks, to overcome impulsive action, to plan a solution to a problem prior to its execution, and to master their own behavior. Signs and words serve children first and foremost as a means of social contact with other people (p: 28).

Learners learn and solve problems by discussing with a teacher or a more capable peer. In this environment language becomes the mediating tool to present and solve the problems that are encountered by the learner. In the first stage, the learner will use language to take control of the task at hand. In the second stage, language is seen to be used parallel to the task to describe the type of action. The final stage will see the language moved to the front of the task, where the learner would plan the course of action needed to handle the task at hand. In short, language functions as the tool
of mediation for learning and development and it is stressed that mediation is essential for learning to mature into development. Here the language tool is created and influenced by the social context and culture of the user. It is through social interaction that a learner will master the skills to solve problems and become self-regulated (Vygotsky, L.S. 1978).


A most essential difference between sign and tool and the basis for the real divergence of the two lines, is the different ways that they orient human behavior. The tool's function is to serve as the conductor of human influence on the object of activity; it is externally oriented; it must lead to changes in objects. It is a means by which human external activity is aimed at mastering, and triumphing over nature. The sign on the other hand, changes nothing in the object of the psychological operation. It is a means of mastering oneself; the sign is internally oriented. (Vygotsky, L.S. 1978 p: 55)

Vygotsky gives examples of the psychological tools as:

- the following can serve as examples of psychological tools and their complex systems: language; various systems for counting; mnemonic techniques; algebraic symbols systems; works of art; writing; schemes, diagrams, maps, and mechanical drawings; all sorts of conventional signs and so on” (Vygotsky, L.S. 1978 p: 55)

Tools and signs, which change over time, are used to perform the crucial act of mediation. Vygotsky (1978) goes on to explain the structure of mediation as follows:

Every elementary form of behavior presupposes direct reaction to the task set before the organism (which can be expressed with the simple S--R formula). But the structure of sign operations requires an intermediate link between the stimulus and the response. This intermediate link is a second order stimulus (sign) that is drawn into the operation where it fulfils a special function; it creates a new relation between S and R. The term 'drawn into' indicates that an individual must be actively engaged in establishing such a link. The sign also possesses the important characteristics of reverse action (that is, it operates on the individual, not the environment) (p: 39-40)

As a result, he argues that "the simple stimulus - response process is replaced by a complex mediated act" (Vygotsky, L.S. 1978 p: 40).
He explains that here the urge to react directly is inhibited and an "auxiliary stimulus" is incorporated which helps complete the activity indirectly.

"This auxiliary stimulus possesses the specific function of reverse action, it transfers the psychological operation to higher and qualitatively new forms and permits human, by the aid of extrinsic stimuli, to control their behaviour from the outside. The use of signs leads humans to a specific structure of behaviour that breaks away from biological development and creates new forms of culturally based psychological process" (Vygotsky, L.S. 1978 p: 40)

Engestrom (1987) points out that "the problem levels in Human functioning was theoretically worked out by A.N.Leont'ev." Leontev, a student and collaborator of Vygotsky, explains the distinction between individual action and collective activity through the following example of "primeval collective hunt" (Leont'ev, A.N. 1978 p: 210)

"When a member of a group performs his labour activity he also does it to satisfy one of his needs. A beater, for example, taking part in a primeval collective hunt, was stimulated by a need for food or, perhaps, by a need for clothing, which the skin of the dead animal would meet for him. At what, however, was his activity directly aimed? It may have been directed, for example, at frightening a herd of animals and sending them toward other hunters, hiding in ambush. That, properly speaking, is what should be the result of the activity of this man. And the activity of this individual member of the hunt ends with that. The rest is completed by the other members. This result, i.e., the frightening of game, etc., understandably does not in itself, and may not, lead to satisfaction of the beater's need for food, or the skin of the animal. What the processes of his activity were directed to did not, consequently, coincide with what stimulated them, i.e., did not coincide with the motive of his activity; the two were divided from one another in this instance. Processes, the object and motive of which do not coincide with one another, we shall call 'actions'. We can say, for example, that the beater's activity is the hunt, and the frightening of game his action.” (Leontev 1981 p: 210. in Engestrom, 1987: web page)

The Vygotskian (1978) triangular model of action had not incorporated the mediation by other human beings and social relationships, as a result the distinction between action and activity was not differentiated, until Leontev's contribution. Leontev (1978) makes the distinction between collective activity and individual actions.

In a collective activity, Leont'ev explains, each individual although having the same motive as the rest of the group may be involved in a number of actions which may not directly correspond to his original motive. Engestrom (1987) points out that

Without the consideration of the overall collective activity the individual beater's action seems 'senseless and unjustified' (Leont'ev 1981, 213 in Engestrom 1987) Human labor, the mother of form of all human activity, is co-operative from the very beginning. We may well speak of the activity of the individual, but never of individual activity; only actions are individual (web page)

Moreover, Leont'ev (1978) argues, that it is the object of the activity that distinguishes one activity from another. According to Leont'ev, "the expression "objectless activity" is devoid of any meaning" (Leont'ev, A.N. 1978). And the object of the activity is driven by motive.
The main thing that distinguishes one activity from another, however is the difference of their objects. It is exactly the object of an activity that gives it a determined direction. According to the terminology I have proposed, the object of an activity is its true motive. It is understood that motive may be either material or ideal, either present in perception or exist only in the imagination or in thought.... Thus the concept of activity is necessarily connected with the concept of motive. (ibid p: 62)

Furthermore, he points out that "activity is a molar not an additive unit" (ibid p: 50) and "Human activity does not exist except in the form of actions or a chain of actions" (ibid p: 64).

Leont'ev (1978) makes the distinction between action and activity and presents a three-level model as:

Collective activity -------------- Motive
Action ------------------------- Goal
Operation ---------------------- Instrumental conditions
(Engestrom, Y. 1999; Engestrom, Y and Miettinen, R 1999)

Here the collective activity is driven by motive, action by goal and operation by instrumental conditions. Engestrom (1999) points out that this distinction "extended the sphere of analysis and directed our attention to the transformation going on between the levels" (p: 23).

Engestrom (1987) argues that "the problem is that the instrumental and the communicative aspect of activity were not brought into a unified complex model by Leont'ev. Vygotsky's model of instrumental act was not graphically superseded in Leont'ev's work" (web). The extension of Vygotskian triangular action model to represent the structure of the collective activity system proposed by Leont'ev is diagrammatically represented in a unified model by Engestrom (1987):

![Diagram of Human Activity](image)

The Structure of Human activity (ibid p: 78)
In the model, the subject refers to the individual in the activity, the object is that which the activity is directed at. The instrument is the mediating tools —psychological and/or physical tools— that helps shape the outcome. The community is the distinct group of individuals who share the same object. Division of labor refers to the division of tasks between the people in the community. Lastly the rules are the implicit and explicit regulations that have an impact on the activity.

2.5.2 Activity Theory – Cultural sensitivity
Michael Cole points out that Activity Theory has ignored the aspect of cultural diversity. He argues that from the start the sociocultural tradition had addressed the psychological functioning in different cultures but the way in which it has been addressed then and now are markedly different.

The historical aspect of the theory follows directly from the specification of cultural mediations as the unique characteristic of human psychological processes, since culture and mediated behavior must have emerged as single process of hominization; human beings live in an environment like no other creature because it is an environment created by the accumulated tool/culture mediated interactions of prior generations, reaching back to the dawn of the species. (Cole, M. 1988 p: 38)

Cole (1988) picks up on the methodological limitation of the Soviet Sociohistorical tradition by referring to Luria’s study carried out in Central Asia.

First... Luria neither studied nor modeled in his experiments the practical activity systems of Uzbeki and Kazaki people and the psychological process associated with them; hence, his interpretations were not grounded in an analysis of culturally organized activities. The second... is Luria’s failure to restrict his conclusions to particular domains, instead appearing to claim that in general there is a change in complexity of mediational mechanisms of cognition in the socioeconomic change from agriculture to industrial modes of production (p: 143).

He goes on to address the above limitations through a study he and his colleagues had carried out in Africa. Cole referring to the study carried out among Kpelle people in Liberia, argues:

...that cultural differences in cognition reside more in the contexts within which cognitive processes manifest themselves than in the existence of a particular process (such as logical memory or theoretical responses to syllogisms in one culture and its absence in another) (ibid).

The author, through this study, points out the importance of context in cross-cultural research.

2.5.3 Activity Theory - Framework for the study of cross-cultural collaboration
The recognition of different cultures and the need to represent activity systems in diverse cultures have led to extending the single activity system model (Engestrom, Y. 1987) to a diagrammatic representation of a minimum of two interacting activity systems model for cross-cultural research (Cole, M. 1998).
Although Michael Cole (1998) is proposing a model for cross-cultural research where it would be used for comparative study, I will adopt this model to study the collaborative process in a cross-cultural environment. Since the participants in my study are situated in geographically distant and culturally different contexts, the above model allows the different contexts and tools used in the cross-cultural activity to be taken into account in the study of cross-cultural collaboration. Moreover, the “potentially shared object” proposed by Cole is for comparative study where the actors/subjects from different cultures would be involved in collaborative activities within their respective cultures, and the object would be conceptually shared. For my study I will be reinterpreting the “potentially shared object” to the “shared object” of the participants collaborating from two different cultures. It will be the shared object of the cross-cultural collaborative activity. I will be using this model to map the activity systems in my study of cross-cultural collaboration. Applying this model for cross-cultural collaborative activity, would help to understand the factors that would impact upon the collaborative activity in a cross-cultural context and would enable me to investigate whether this model is adequate for the study of collaboration in this environment.

2.6 Conclusion

Studies in cross-cultural studies have mainly been carried out in the area of business management where business firms and organizations from different countries and cultures have been compared
against determinants identified to study cultural influence on work values. These determinants have been power distance, uncertainty avoidance, masculinity, individual, long and short-term orientation. The attitudes and structures of the institutes are also taken into consideration. However, there are only a few studies, which have addressed cross-cultural collaboration. These studies have been carried out among academics and have identified issues such as trust, and good communication between members. It is also pointed out that the different cultural, contextual and academic cultures need to be addressed in cross-cultural collaborative research. However these studies in cross-cultural collaboration have been carried out where the participants have been located in the same place, hence have not addressed the issues of cross-cultural collaboration when the participants are dispersed. Discussing issues of communication, studies of cross-cultural communication have addressed this on the basis of high context cultures and low context cultures. It is pointed out that high context cultures provide a large amount of information in the communication to present their point where they are indirect in their approach in communicating the idea in mind. In contrast, low-context cultures are direct and convey their point by providing all the information needed in order to discern the meaning from the conversation. Again these studies have not addressed the impact of online technology on the communication in these different cultural contexts.

Studies carried out in the area of collaboration have identified a number of determinants for successful collaboration. Competence, communication, shared goals, shared space and roles in the activity are identified as a few of these determinants. It is also pointed out that forming and maintaining relationships in collaboration is closely linked with physical proximity and physical proximity is strongly related to frequency of communication. Experience, leadership style, personality and level of efficiency and the temperament of the coordinator were seen as important to a collaborative activity. And private factors, such as an individual's personal commitment and the quality and nature of the communication needs to be addressed. The studies also point out that although division of labour among collaborative partners might increase productivity, in a complex task, this very fact might affect the productivity. It is also pointed out that the success of a collaborative activity is also influenced by the support given to the participants from the work organizations. These studies have addressed collaboration where the participants are co-located but with the introduction of online technology, collaboration has been taking place across boundaries.

Studies have addressed the potential and limitation of the new technology for communication. Interactions and communications taking place at face-to-face meetings and online meetings have
been addressed. With the new technologies, it is argued that a synchronous communication medium is useful for building a shared understanding while asynchronous communication is seen as mode for information exchange. Hence it is argued that collaboration has to be supported by both these media of communication. It is also pointed out that there is a co-relation between the use of two or more communication tools on collaboration and the progress on work. Studies have also addressed the take up of emails by academics and have pointed out that the take up and access to the technology is not co-related. So, it is important to recognise that the availability of technology does not guarantee the use of the technology. In a cross-cultural environment, it is important to recognise the preferred means of communications for all parties involved and provide support as it is pointed out that different cultural groups prefer certain types of communication media and the process of arriving at decisions are also different. Nevertheless, these studies have not addressed how these technologies are perceived and used by different cultures. Furthermore studies have not addressed the use of text-based communication media by users whose native languages do not use a roman type sets writing system.

Computer support for collaborative work has been studied where the importance of shared online space is vital for interaction and communication when participants cannot meet face-to-face. It is argued that the richness of online discussions depends on the role of the online team manager. Studies argue that if members do not share the expectation and behaviour patterns of using the technology then the collaborative activity would be affected as user response to online discussion and messages are slowed down. Addressing the psychological aspects of the participants in the online collaborative environment, it is argued that, issues such as trust of the participants and the medium is vital for successful online collaboration. Like all the other studies above, none of these studies have addressed the psychological and the socio-cultural aspects of collaborating across cultures. There have been studies discussing facilitating online teams across boundaries and it is argued that facilitators should assess the conditions that might affect the selection and implementations of communication channels. These studies also acknowledge that there might be a difference in preference towards a particular mode of communication among certain groups of people.

Discussing design issues of computer supported environments for collaborative work, it is pointed out that, aspects such as competition, conflict and control need to be addressed. Activity Theory is used to identify the three levels of the collaborative activity, coordination, co-operation, and co-construction, as important elements of collaboration and this needs to be taken into account when
designing computer support for collaborative work. Activity Theory is also used to discuss the importance of cultural contexts in studying activities. Extending the single Activity system model developed by Engestrom (1987), Michael Cole (1988; 1998) proposes an interacting activity systems model for the study of cross-cultural research.

The studies discussed in this chapter have addressed issues of cultural impact on organizations, communication and collaboration. It has also presented studies on the use of technology for communication and collaborative work. Moreover the aspects for designing technology for collaboration has also been discussed. However the study that has addressed cross boundary collaboration has addressed only the role of facilitator. Hence none of the studies have discussed the factors that might impact upon collaboration in a cross-cultural context supported by face-to-face and online technology. My qualitative study on collaborative academic projects in cross-cultural context will address issues that would affect the collaborative process in this environment. I will be using the interacting activity systems model proposed by Michael Cole, for the study of cross-cultural research, to map the cross-cultural collaborative activity. The methodology adapted for this study will be discussed in the following chapter.
CHAPTER 3. METHODOLOGY

3.1 Introduction
This chapter discusses the approach adopted to carry out the study on academic collaboration in a cross-cultural environment. Section 3.2 provides background and discusses the research approaches taken in related fields and the approaches used to study the Internet. Section 3.3 presents my own role as the researcher in the EU-India programme. Section 3.4 discusses the case study approach used to carry out the study and section 3.5 presents a brief description of the projects selected for the study and how they were selected. The next section, 3.6 discusses the techniques used to collect data for the study and the analytical technique is discussed in section 3.7. This is followed with an account of the difficulties encountered in carrying out this study (3.8). Finally section 3.9 discusses the limitations of the study.

3.2 Possible approaches
In the social sciences, qualitative and quantitative data gathering approaches have been used to carry out research in a number of areas. The quantitative approach relies on numbers and measures in data gathering and analysis. Advocates of quantitative methodologies sometimes argue that this approach gives the study more credibility than a qualitative approach as it appears to be objective and often has a bigger data set to support the findings. If the research is carried out well, the results can be replicated. The quantitative approach employs a range of methods both survey and observational to gather large amounts of data for statistical analysis.

Proponents of a qualitative approach argue that this approach has the techniques to capture a comprehensive picture of the behaviour of human beings in a social context, which the quantitative techniques fail to do. Strauss and Corbin (1990) argue:

"Qualitative methods can be used to uncover and understand what lies behind any phenomenon about which little is yet known. It can be used to gain novel and fresh slants on things about which quite a bit already known. Also, qualitative methods can give the intricate details of phenomena that is difficult to convey with quantitative methods" (p.19).

Qualitative approaches use methods such as ethnography, grounded theory, life histories, phenomenological approach and case studies. These qualitative methods employ techniques like participant observation, interviews, fieldwork, biographies and oral histories. Open-ended questionnaires are also used to extract data for qualitative analysis.
3.2.1 Research approaches for cross-cultural studies
Since the participants of the study come from different working contexts and cultures it is important
to identify a suitable approach for the study of cross-cultural collaboration. However, cross-cultural
studies carried out have tended to be comparative studies where one country is compared against
another on a range of aspects. These studies have been carried out using mainly quantitative
approaches. Studies carried out in intercultural management research largely rely on the quantitative
instance, Hofstede (2001) uses a survey to study work related values among IMB employees in fifty
different countries. This study was a comparative study where the researcher identified dimensions
and compared all the countries along these dimensions, thus extracting certain aspects but failing to
take into account the entire scenario and the relationships within. There have been a few studies
carried out using qualitative approaches, which have addressed the cross-cultural issues within a
larger picture. Easterby-Smith and Malina (1999) report on a qualitative study carried out on cross-
cultural collaborative research conducted by British and Chinese academics on eight companies in
the United Kingdom and China. In order for the study to capture aspects of culture, each research
team had Chinese and British academics as “insiders” and “outsiders” on the study. In this field
study “reflexivity” was employed as a research tactic to overcome the problem of the researchers
being outsiders and not possessing the relevant background knowledge to make sense of the
scenario. The authors explain that “reflexivity involves using information from another to gain
insight into oneself (Easterby-Smith, M. and Malina, D. 1999).” This idea is a move against the
positivist argument for the social researcher to be detached, from what is being studied.

Methods for cross-cultural study have varied from discipline to discipline. Creamer (1999) relies on
a qualitative approach to study the patterns of informal co-authorship among academics in intimate
partnership while Ambile et al. (2001) take up a case study with mixed methods to identify
determinants for successful academic- practitioner collaboration in management research. This
study relied on participant observation, surveys, interviews, informal discussions and records of
group meetings for data collection.

Increasingly new technologies are introduced into work environments and a number of studies have
been carried out using various approaches to understand the potential and limitations of these
technologies in these contexts. Furthermore studies have been undertaken to understand the socio
cultural changes that have come about with the introduction of these new technologies. Network
technologies have paved the way for interaction, communication and collaboration across
boundaries and prompted a number of studies. Since the participants from the EU-India programme are relying on computer support for cross-cultural collaboration, it is important to identify a methodology that would make it possible to study the collaborative process while taking into account the role of technology. Hence, the following section discusses some of the approaches taken to study the use of new technologies in various fields.

3.2.2 Research approaches for the study of computer supported environments
With the emergence of computers, the network communications technology and the "virtual" world, it has become important to explore new methodological approaches. The traditional methodological approaches and methods have come under critical discussion (Jones, S 1999). The "virtual" world seems to encapsulate the participants' behaviours, attitudes and perceptions of that world but also the behaviours, attitudes and perceptions of the world outside of the "virtual" world, the "real" world. Also the fact that the "virtual" world transcends the traditional, organizational and national sociocultural boundaries to create a world of its own is a vital issue when studying the Internet and the interactions that take place over these channels (Sudweeks, F and Simoff, S J 1999). In this "virtual" world a number of "real" world attitudes and behaviors come together and become redefined. It has therefore been a difficult task for researchers to identify methods of study from the traditional methods without having to reinterpret them. It has been argued that qualitative and quantitative methods can be used to complement each other to study this newly emerged "world" (Sudweeks, F, and Simoff, S.J. 1999). Kendall (1999) argues that a participant observer method may provide the most accurate observation to study on-line synchronous forums. As on-line participation is affected by off-line activities, it is argued that the participant observer method allows the researcher to understand the connection between on- and off-line interactions. Furthermore it enables the researcher to understand the on-line culture which is influenced by the latter. Hine (2000) and Baym (2000) use an ethnographic approach to study the discussion groups. Hine (2000) argues that "ethnography is an ideal methodological starting point for such a study. It can be used to explore the complex links between the claims which are made for the new technologies in different arenas: the home, the workplace, the mass media and the academic journal and monograph" (p: 04). She points out that cyber space is not detached from the "real" world and to study one without the other would fail to give an accurate and rich picture of the scenario. Hine (2000) also argues for reflexivity as a method to investigate this field, as the researcher is involved in the context of the study. She proposes virtual ethnography as "adequate for the practical purpose of exploring the relations of mediated interaction even if not quite the real thing in methodologically purist terms" (p: 65).
In the area of computer supported cooperative work (CSCW), comparing face-to-face and CMC channels in Group Decision Support Systems, Barkhi et al. (1999) carried out experimental studies in controlled environments. The data was analyzed using statistical analysis. A number of studies (Irani, T. 1998; Mitra et al. 1999) have relied on survey methods to study the impact of CMC at work places. Walsh et al. (2000) carried out a survey study on the use and effects of computer mediated communication on scientific work. The survey was carried out among three hundred and thirty three scientists to arrive at a large data set to generalize to the population of scientists in the fields of experimental biology, mathematics, physics and sociology. Survey methods have also been employed to study the gender, ethnicity and discourse (Wolfe, J. 2000). Siegel et al. (1986) studied the effectiveness of computer mediated communication (CMC) on group decision processes, using content analysis on the recordings of face-to-face interactions and CMC discussion.

Unfortunately these studies have tended to address only the communication activity itself or the technology's capability but not the social and cultural context in which the participants are interacting or using the technology. Researchers recognizing the need to study interaction and communication in social and cultural context have used various qualitative approaches. Kraut et al. (1987) conducted fifty semi-structured interviews to study relationships and tasks in scientific research collaboration. Garton et al. (1997) argue for a social network approach for the study of computer mediated communications. They define a social network as "when a computer network connects people or organisations". The study goes beyond studying single users, two person ties and small groups to examining the computer supported social networks. The social network analysis focuses on patterns of relationship among people, organizations and states. This method of studying looks at the network as interaction between groups and looks at the process of networking.

Researchers have used multiple methods to study the interactions taking place in the "real" and "virtual" world. In computer supported collaborative learning Mulder et al. (2002) studied the process of technology mediated interaction for group learning and shared understanding using mixed methods.

Hamman (1997) carried out a study on cybersex using ethnography as the methodology. He draws attention to the difficulties encountered when using ethnographic methodology for the study of text based virtual environments. He identifies these difficulties as "locating the parameters of the population of study, whether or not to depend on online interviews and the frequent misinterpretations caused by the absence of physical cues and gestures in text based virtual
environments" (ibid: web). Hine (2000) uses a virtual ethnography approach to carry out a case study to explore the Internet as a culture and cultural object in the case of Louise Woodward.

Jassawalla and Sashittal (1998) took up a grounded theory approach to study collaboration in a high-technology new technology development process. Pauleen and Yoong (2001) wanting to use an interpretive qualitative methodology to study relationship building and the use of ICT in boundary-crossing virtual teams, married action learning and grounded theory to use a grounded action learning approach. They argue that this qualitative approach enabled them to study the dynamic and ambiguous collaborative interactions of the virtual teams. Furthermore the study was able to generate a "theoretical model of facilitator-led relationship building in virtual teams" (p: 07).

As my study was on academics collaborating on projects in a cross-cultural context with computer support for interaction and communication, it was important to identify a qualitative approach that would enable the study to take into account the various social, cultural and technological aspects of the collaborative process.

3.3 Methodology for the study of collaborative academic projects in a cross-cultural context

The qualitative approach I have taken to study the collaborative academic projects in a cross-cultural context is grounded theory. Grounded theory allows for the hypothesis and the theory to evolve out of the data, thus "grounding" the theory on the basis of the data (Weingand, D E 1993). Within this approach I have undertaken case studies to identify the factors that would impact upon collaboration in a cross-cultural environment. Strauss and Corbin (1990) explain grounded theory as "one that is inductively derived from the study of the phenomenon it represents. That is it is discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon" (p. 23). They go on to stress that one does not start with an attempt to prove a theory but allows the factors to emerge from the data. However it is pointed out that if the emerging theory has any relationship to an existing theory then it could be used to extend the other. They alert readers to the fact that one can "incorporate seemingly relevant elements of previous theories, but only as they prove themselves to be pertinent to the data gathered" (p: 50) in the study. They also argue that "the philosophical principle underlying this approach is that presenting this faithful account, the researcher's biases and presence will not intrude upon the data" (p: 12). However, the role of researcher as an interpreter of reality is acknowledged.
One of the ways to interpret reality is to be actively involved in the study. Social constructivists argue that it is through active participation that researchers understand the environment under study (Berger, P L and Luckman, T 1971). However, Engestrom and Miettinen, (1999) point out that the approach taken by the constructivists is “narrowly focused on the construction of texts (p: 09)”. He argues that Activity Theory takes a broader view of construction and he explains that:

The analyst constructs the activity system as if looking at it from above. At the same time, the analyst must select a subject, a member (or better yet, multiple different members) of the local activity through whose eyes and interpretations the activity is constructed. This dialectic between the systemic and subjective-partisan views brings the researcher into a dialogical relationship with the local activity under investigation (p: 10).

Activity Theory allows the researcher to take into account the environment where the activity is situated, and the various components of the activity while recognising the active role of the researcher. Since the cases identified for the study are based on projects, Activity Theory is used to understand the cross-cultural collaborative activity by mapping the activity of the participants onto the activity systems developed by Michael Cole (1988; 1998).

3.3.1 The researcher in the EU-India Cross-Cultural Innovation Network programme

The role of the researcher in this context has been that of an “insider” and “outsider” and this has influenced and shaped the way the study was designed and carried out. Here I do not use the term “insider” and “outsider” in the way proposed by Easterby-Smith and Malina (1999), where the team of researchers on a cross-cultural study comprise of “insiders and “outsiders”. I use the term “insider” and “outsider” to capture the nature of my role as a researcher in the EU-India programme and with regards to cultural association.

At the EU-India programme level the researcher is defined as an “insider” on the basis of the fact that I joined the EU-India programme as a research assistant at the start of the programme’s activity and was attached to the main coordination centre at the University of Brighton. As a research assistant I was to research into collaboration within the programme, be part of a team to design the programme’s web site and to set up on-line communication environments to facilitate collaboration. In the six months run-up to the first conference of the programme, organised by the main coordination centre, I designed a prototype web site and set up a mailing list for the EU-India programme. This was done on the assumption that all the participants were familiar with this technology. I also actively participated in organizing the workshop and conference as part of the coordination centre team. It was in this conference and workshop that I met all the programme’s identified participants for the first time. During the conference and workshop I was introduced as
the programme’s researcher studying the collaborative activity on the programme while providing on-line tools to facilitate collaboration.

As an “insider” I was recognised as part of the EU-India community paving the way to get to know the participants better in the programme than if I had been an “outsider”. This also enabled the participants to approach me to act as mediator and facilitator for their activities while they contributed to the design of the web site and cooperated with my study. The impact of being an “outsider” is discussed later in this chapter. Furthermore, my role as an “insider” and an “outsider” based on cultural association did also have an impact on the way the participants interacted with me. This aspect of “insider” and “outsider” is discussed in detail in Chapter Nine.

3.3.2 Case Study method
The nature of case study is that it strives towards a holistic understanding of cultural systems of action (Feagin, J et al. 1991). The case study method is widely used to carry out an in-depth study of a particular scenario. Case study is explained as a method that involves ‘gathering information about a particular person, social setting, event, or group to permit the researcher to effectively understand how it operates or functions’ (Berg 2001 p. 225). Some see case study as a technique to gather data while others see it not as a data gathering technique but a methodology which incorporates various data gathering tools (Hamel, J et al. 1993). Some researchers have argued that case study methodology deals with microscopic situations because the number of cases undertaken are small (Giddens 1984b in (Hamel, J.et al. 1993)). However, Hamel et al. (1993) argue that if the study establishes the parameters that can be applied to all research then even a single case is acceptable provided it fulfills the original objective. Stake (1995) classifies case studies into three types: intrinsic, instrumental and collective case studies. Intrinsic case studies are undertaken to carry out an in-depth examination of a particular case. It gives the researcher an opportunity to understand the intricacies of a particular scenario, while instrumental case studies are carried out when there is “a research question, puzzlement, a need for general understanding, and it is felt that we may get insight into the question by studying a particular case” (ibid p. 03). In this instance the cases are considered to act as a source against which the research question is pursued. The case studies take a supportive role, secondary to the research question. Instrumental case study can be carried out using a number of cases with “important coordination between the individual studies. We may call the work collective case study” (ibid p: 04). Important components for designing case study research are identified by Yin as “a study’s question, its propositions (if any), its unit(s) of analysis, the logic linking the data to the proposition and the criteria for interpreting the findings”
(Yin, R K 1994, p.20). Techniques widely employed in gathering data in case studies are in-depth interviews, life histories, documents, oral histories and fieldwork and participant observer (Yin, R.K. 1994).

In order to carry out a study on collaborative process in a cross-cultural environment, it is important to take into account participants' activity in relation to their motive, institutional culture, their work practices and ways of interacting and communicating not only face-to-face but also over the internet. In short a holistic approach is needed to study this scenario. A case study approach was seen to be the most useful and appropriate method to use, eventually using four cases to come to a "general understanding" as proposed by Stake's (1995) model of the instrumental case study method.

3.3.3 The Projects
Cases were gradually identified in the EU-India Cross-Cultural Innovation Network programme to study academic collaboration in a cross-cultural environment. These cases can be identified, according to Stake's definition as collective case study, where four illustrative cases have been taken up for study with coordination of issues between the cases (Stake, R.E. 1995).

The cases in the current study were based on the collaborative projects identified by the participants under the framework of the EU-India programme. The programme did not restrict the number of participants in each project but for most of the projects discussed here only two participants were involved, one an academic from a European University and the other a researcher from an Indian research institute or an academic from an Indian university. Below is a brief description of the projects undertaken by the participants.

3.3.3.1 Floriculture Project
The Floriculture Project was identified by the coordinators of the EU-India Cross-Cultural Innovation Network programme for collaboration between an academic from the University of Wales College Newport, UK and a senior researcher from the National Institute of Science Technology and Development Studies (NISTADS), Delhi, India. The collaborative project was set up in order to create a multimedia knowledge archive on the floriculture sector and to build a multimedia product for information dissemination on floriculture.
3.3.3.2 Computer Science Project
The participants identified the project “Computer Science” within the first six months of setting up the EU-India programme. The participants of the project were an academic from the University of Brighton, UK and an academic from the Institute of Informatics and Communication, Delhi University, South campus, India. Although the Indian participant is a systems manager in his institute he has responsibility for teaching and carrying out academic activity. The project was set up to design a collaborative project involving students from both universities to build an online resource on the subject of computer networking.

3.3.3.3 Bankura Project
The Bankura Project was initiated by the participants to carry out multimedia knowledge archiving on technological change among brass artisans in the Bankura region West Bengal, which has a large group of nomadic but now settled brass artisans, creating decorative brass objects. The participants of the Bankura Project are an academic from the School of Art and Design, University of Wales College, Newport, United Kingdom and the Director, of National Institute of Science, Technology and Development Studies (NISTADS), Delhi India.

3.3.3.4 Dairy Project
The participants of the Dairy Project were academics from Denmark Technical University (DTU) and Istitute per Lavro (IPL) in Europe and Punjab Agriculture University (PAU), Gujarat Law Society (GLS) and a senior researcher from National Institute of Science, Technology And Development Studies (NISTADS) in India collaborating to study the Dairy sector in European and Indian regions. The academic from DTU is the coordinator for the Dairy Project as a whole and for the European group while the senior researcher from NISTADS is the coordinator for the Indian group of the Dairy Project. The Dairy Project was set up to study the dairy industry in Denmark and Italy in the European region and Gujarat and Punjab region in India. It was also an attempt to design a methodology for the study of the dairy sector across cultural boundaries.

3.3.4 Cases identified for study
Cases identified for the study were diverse with the case study participants carrying out different activities. However the process of the participants coming together to identify the projects and carry out their activity within those projects were very similar. This is due to the fact that the participants were only able to meet up with other participants through the mechanisms, such as workshops and seminars, provided by the EU-India programme. Even after the projects were set up the participants had to rely on the EU-India programme to provide support mechanisms as the participants were situated across geographical and cultural distance.
Each case identified for the study, as discussed above, had two participants one from Europe and the other from India. Even though each case consisted of a very limited number of subjects the factors that were identified in one case was seen to be recurring in the others as the new cases evolved. Since the study of the cases was based on a qualitative approach, these limited numbers of participants were not seen as an issue. The factors that were to emerge in one case would be raised in other cases to investigate whether they were recurring. Furthermore, when there were differences that could be attributed to, not only collaboration in general but also to cross-cultural collaboration, the factors that was identified with Indian or European participants in one case could also be seen in other cases. Cross-cultural here was qualified as not only of the national or regional cultures but also institutional cultures. Cross-cultural difference could also be picked up across the various cases where participants came from different institutions and sometime similar institutions with different work practices. If there was a pattern emerging then it would be safe to say that these factors have played an important role in the cross-cultural collaboration, irrespective of the limited number of participants in each case.

Chronologically the first project to be identified in the EU-India Cross-Cultural Innovation Network programme was the Floriculture Project. The second project was the Computer Science Project, which was identified and set up three months after the Floriculture Project. The Bankura Project came out towards the end of the Floriculture Project when the participant from the University of Wales College moved to this new project. The Dairy Project was being discussed by the Danish participant from the start of the EU-India programme and was set up six months following the setting up of the EU-India programme. After six months of setting up, the Floriculture Project had come to an end and the researcher from the National Institute of Science Technology and Development Studies moved to the Dairy Project.

Identification of cases for study was gradual. Firstly, the Floriculture Project was identified for a case study. The EU-India programme coordinators and I got in touch with the participants of the project and requested their consent for the study. Following this the Computer Science Project was identified for case study and they too were asked for consent to study them. When the participants moved from the identified Floriculture Project to a new project they were followed by the researcher there and the new projects were identified for case study. Two new cases that evolved out of Floriculture case were Bankura and Dairy. The new participants in these new cases, were informed of the research and they agreed to be interviewed and observed. Initially, the number of case studies to be undertaken were two with two participants each but when the Floriculture case
study came to an end after a short space of time of its set up, I decided to follow the participants to their new projects and study the new scenario. This resulted in two more case studies giving an opportunity for a clearer picture of the collaborative process.

When the Dairy Project was taken up as a case for study, the Indian participant from the Floriculture Project moved to this new project and had became the coordinator for the Indian group in the project. The Dairy Project has six participants from EU-India Innovation Network programme all coming from different institutes involved in the programme. This posed problems of gathering data from all of the participants. Consequently it was decided to carry out the study on the coordinators, European and Indian coordinators, in the Dairy Project. This situation presented an ideal opportunity to confirm some of the initial data gathered from the Networking and Floriculture projects.

The participants in the case studies were assured that their names would not be used in any publication and their identity protected. Since I was a researcher attached to the EU-India Cross-Cultural Innovation Network programme, participants of all four cases agreed to be observed and interviewed for my research.

3.3.5 Techniques used in the study
There are multiple layers of meaning in a given situation and these layers could only be studied by becoming part of the group of people in that situation. Being part of the group provides the researcher the opportunity to study the phenomenon and identify factors as they emerge in that context. The techniques employed in this study to collect data were questionnaire, participant observer, in-depth interviews, documents produced by the participants, email communication voluntarily copied to me and logs accessed through the mailing list.

3.3.5.1 Participant observer
The participant observer method has been used to study social interactions, behaviors and attitudes in a community. Densin defines participant observation as:

..a field strategy that simultaneously combines document analysis, interviewing respondents and informants, direct participation and observation, and introspection (1989b, pp.157-8 in Bennett, K 2002)

When using this method the researcher becomes a participant and an observer of the community or group that is being studied. Data for the study is collected through observing the activities of the community or the group that is being studied and participating in the group’s interactions and
activities. Katy Bennett (2002) points out that “participant observer can be a bit of a contradiction because it is about both taking part and observing” (p. 140). Taking observation to the extent of being highly objective might affect the understanding of the research and getting too involved in the participation might end up in a situation where the researcher is unable to cast a critical eye over the situation. As a result it is important to have a balance of participation and observation. With participant observation, it is argued that the context under study is affected by the researcher’s presence and creates a context “where the subjectivities of the researcher and the researched becomes entangled as they bring their worlds to bear upon it” (Ibid. p. 141). Hence it is important to recognise the subjective element in the interpretation of the field by the researcher.

The use of participant observation in the study of the “real world” and the “virtual world” raises the issue of ethics (Yin, R.K. 1994; Hine, C. 2000; Bennett, K. 2002; Flick, U. 2002). Ethical issues such as informed consent and confidentiality are important. The researcher going into the field to carry out a study has to provide information regarding the study to the subjects before gaining consent to study them. However there have been debates (Yin, R.K. 1994; Bennett, K. 2002; Flick, U. 2002) on how much information is to be divulged to the subjects under study since the information can influence the subjects to behave in a certain manner. On the issue of confidentiality, the researcher is expected to protect the identity of the subjects by changing names. In the study of the “virtual” world some argue changing just the name of the informant is not enough as online verbatim from newsgroups and discussion areas can be traced back to the informant (Hine, C. 2000). In both contexts, on-line and off-line, the researcher has to decide on how much of the informant’s personal information that has been collected through participation and observation be reported on the study. Researcher being a participant in a community is accepted and trusted by the members of that community hence it is important to take into consideration as to what can and cannot be reported from participation and observation. Bennett (2002) points out that

“our relationship with the people we research, how we write through the research and what we write push us to confront issues of ethics and to question both ourselves and the research” (p. 141).

Participant observation in my study took a number of forms. Participant observation in the cases under study was to be carried out during face-to-face meetings – informal meetings, conferences and workshop- and on any on-line interaction- mailing lists and TeamRooms that would take place. It is important to draw attention to the fact that I as a researcher reside in Brighton, United Kingdom and all the participants from the four cases taken up for study live outside of the United Kingdom except two. Of the two participants who live in United Kingdom, one comes from Brighton while the other lives Wales.
Participant observation during face-to-face meetings

In the September 1999 conference, the official EU-India programme launch event, I participated in the workshop and conference presenting an outline of my study. This meeting was also an opportunity to observe the participants present their work, express their interests, identify possible projects and participants for collaborative activity. This September conference was the first time I had met all of the participants of the EU-India programme. After-hours of the workshop and conference were spent on participants getting to know each other in relaxed and informal settings. As the researcher of the EU-India programme I was able to join in these informal gatherings and got to know the participants. During this meeting, the EU-India Cross-Cultural Innovation Network programme's mailing list was set up, and introduced to the participants. As a participant observer, I too joined the mailing list. A temporary web site designed by me for the programme was also presented at this meeting and feedback and interaction was requested from the participants.

Participant observation in the participants working contexts was carried out every time I was able to visit the participants. Due to the limited funds available for my travel through the EU-India programme, I was only able to travel to India twice. The EU-India programme funded one of the visits while the other was from my personal funds. Consequently, the participant observation in India took place over two one-week visits where most of the time was spent with the participants. In the case study of Computer Science Project the observation was carried out around the interaction at conference, workshops and informal meetings, which took place twice a year. The participants of the Computer Science case met each other face-to-face either when the participant from England had visited India to run courses or when the participant from India visited England to attend a conference or participate in a workshop organized by the EU-India programme. These meetings were not taking place at regular intervals such as every six months. Some of the time the participants met after four months and at other times after eight months. I was able to observe the participants working together when the Indian participant was in England for a week to attend a conference and had met up with the participant from England. This face-to-face meeting was followed by the visit of the English participant to India. During this weeklong visit I was able to join the participants in India to observe their interactions. The visit to India was followed by the Indian participant's visit to England for a workshop organized by the EU-India programme and this presented me with another opportunity to observe the participants' activities.

The participants of the Floriculture case were observed in their own physical working environments when I was able to visit them. But participants' face-to-face meetings could not be observed, as I
could not be present during their meeting in India and the Indian participant did not visit England during the lifetime of the Floriculture Project. From the two visits I had made to India I was able to observe the Indian participant in her environment but was not able witness any interaction between the Indian and Wales participants as the latter was not visiting India during that time. Following the short life of the Floriculture Project and the participants’ move to new projects Bankura and Dairy, there was no facility to observe activities in these new projects either. Since the face-to-face meetings of the participants in the Bankura and Dairy Projects too took place outside of the United Kingdom, it was not possible to observe them during their meetings. However I was able to visit the participants from the Bankura and Dairy Projects, in their work place and spend at least two days with them observing their surrounding and work at a later time. As a participant I acted as a mediator between the Indian participant and the coordinators in the Dairy Project. Furthermore, after the first six months of the Computer Science Project the participants appointed me as the facilitator of the project opening up the opportunity to participate. As a coordinator I was to act as mediator and motivator for their activity.

Participant observation on on-line interactions
An online shared space called the “TeamRoom” was set up. This is a private space where only the participants of a particular group could gain access and participate. With the permission of the participants, I joined the online group as a “lurker”. The participants were informed that I would be present only as an observer/"lurker" in the TeamRoom. However, since the TeamRooms were not being used and the Computer Science Project participants had appointed me as the facilitator, I took to participating in the Computer Science Project’s TeamRoom. On the TeamRoom I posted a draft of a collaborative paper that I had written with one of the participants, for comments and development. The idea was to invite participants to use the system and stimulate interaction.

The on-line environment was the only way of observing the activities of these participants when they were working across distance and when I was not able to be on site to observe the activities. The TeamRoom system was also set up for the Floriculture Project case study and I with the consent of the participants joined as an observer/"lurker". However none of the participants used this system as they claimed that it took more time and effort to venture out into this environment to discuss and post messages.

Since the TeamRooms were not used by these two projects, the other cases to be identified in the EU-India programme, the Bankura and Dairy Projects were not provided with this facility.
3.3.5.2 Questionnaire
Along with the techniques of case study methodology I have also used open-ended questionnaires to collect data. Reasons for designing the questionnaire are that the subjects of the case study were situated in different countries to that of the researcher, thus making it difficult to carry out face-to-face interviews. The questionnaire was seen as a tool to gather exploratory information to build a profile of the participants and to identify issues such as familiarity of computer mediated communication tools for collaboration. This was also used to verify some of the observation made on the lack of use of the mailing list. The questionnaire was piloted among three academics in my school at the University of Brighton for comments. The time scale given to complete the questionnaire was two weeks. The comments given in this pilot phase were that the time scale given for the completion of the questionnaire was too ambitious, so the time scale was increased to four weeks. It was also mentioned that the questionnaire was asking for a lot of information. Taking this into account, the questionnaire was split in two parts and sent out for completion. However, despite this, only one of the participants completed the questionnaire. Studying the survey research method for data collection, Witmer et al. (1999) and colleagues argue, that short email questionnaires will lead to a higher response rate rather than a long questionnaire. Consequently, a very short focussed questionnaire on their preferred use of technology was emailed to the participants and all the participants responded. This questionnaire was embedded in the email, not a formal and highly structured “questionnaire”, but an email with five questions. Although questionnaires are used for survey methods with quantitative approach, here it was used as a qualitative approach where the data was used to verify and confirm the observations in the use of online tools and reports sent to the coordination centre.

3.3.5.3 Interviews
Another main source of data collection was carried out through in-depth interviews. As Yin (1994) points out:

Interviews are essential source of case study evidence because most case studies are about human affairs. These human affairs should be reported and interpreted through the eyes of specific interviewees and well-informed respondent can provide important insight into a situation (p. 85).

Bennett (2002) points out that interviews are a rich source of data as they allow the researcher to pick up on “differences and contradictions” (p.155).

The interviews were semi-structured and were based around reasons for participating in the EU-India programme, work practice in the participants’ working context and the use of new technology for collaboration. They were carried out in a conversational manner as interviews are “a dialogue
rather than an interrogation” (Valentine p.111 In Berg 2001). Most of the interviews were conducted during face-to-face meeting of the participants. These meetings did not take place at regular intervals as the participants, except one, were situated at different institutes to that of the researcher. Interviews over the telephone were not possible due to the cost of long distance calls. However there was one telephone interview carried out towards the end of the data collection, two years after the projects were identified for study. It was a semi-structured interview. Since I had already conducted a face-to-face interview with this particular participant before this interview, I had established a good rapport with the interviewee (Berg, B L 2001).

The duration of the interviews was between half and one hour long. Frequency of the interviews on any case study is dictated by the frequency of face-to-face meetings between the case study participants and the researcher. Most interviews of the Indian participants of the case study were carried out during my two visits to India. Interviews were also conducted when the participants visited my institute, University of Brighton, for conferences or workshops. Over emails, telephone or face-to-face meetings, the interviewees were requested for convenient days and times to conduct interviews. During this organizational phase, the participants were informed of the length of time the interview would take and assured that their name would not appear in any publications. Once the interview was carried out they were transcribed and sent to the participants for approval. The limitation placed by infrequent interviews was overcome by the progress reports and write-ups submitted every six months to the coordination centre of EU-India programme. As a result wherever interviews were not possible, reports written by the participants, visiting each other’s working contexts to discuss and plan the stages of their activities, were used as data source. Academic papers written by project participants for publication too have been used as a resource for capturing the activity. These reports have also helped to follow the progress of the project when participant observation was not possible.

3.3.5.4 Textual analysis
Textual analysis is identified as a qualitative technique used to unpack “the cultural meanings inherent in the material in question. The content of a text is seen as a mediator of latent and highly variable cultural themes. Textual analysis thus draws upon the researcher’s own knowledge and beliefs as well as the symbolic meaning systems that they share with others.” (Hannam, K 2002 p: 192). However Hannam (ibid), citing Gregory and Walford, alerts the researcher to the fact that meaning in the text is itself a creation not a reflection of the world. The strength of the textual analysis technique is that it enables one to carry out an in-depth analysis of particular scenario.
I used textual analysis technique to study not only the documents produced by the participants as reports and academic papers but also the text based online communication.

The participants in the EU-India programme were to use emails as the main communication technology to interact and communicate over the distance to collaborate on various activities. This assumption was made on the fact most of the participants of the programme had an email address although the technology was relatively new to the India participants. Since the online technology was new in India, the universities were relying on private Internet Service Providers to access the Internet (see chapter 1. for more detail). Consequently the cost of being on-line was considerably high for the Indian participants irrespective of whether they accessed the service from home or the institute. The time difference between Europe and India, and cost of being online for the India participants, left them with only the use of asynchronized text-based electronic communication tools. Hence email text based TeamRooms and mailing list, were identified as the tools for interaction and communication between participants for the collaborative activity. In turn I used this text based interaction as a source for data since most interaction and communication has to take place over this online medium due to that fact that the participants of collaborative projects are situated in two continents and five countries.

In almost all studies where emails have been one of the sources for data collection, the researcher has been an active participant in the project (Kaye, A.R. 1993) and has had access to the interaction and communication unlike my involvement in the EU-India programme. In this, the role of the researcher was that of "an insider" as well as "an outsider". I was an insider as I was attached to the programme as the researcher but I was also an outsider as I was not an active participant in the various collaborative projects identified within the programme. As a result emails between the participants in the various collaborative projects were identified by the coordination centre as "internal" and were not available for me to use as a mechanism to collect data for the study. However, the coordination centre allowed me to request the participants individually to copy me their email interactions on their project. All of the participants in the identified cases agreed to copy their emails.

An alternative to requesting participants to forward or copy emails was to set up an email group for each case study. With this option there was the concern that it might complicate the communication and collaborative process, due to the fact that some of the participants were not familiar with the
technology. The difference between a mailing list and an email group is very narrow that it could lead to confusion. Consequently this might make the whole activity laborious and have an adverse effect on the informal communication process of various projects. So the option was to set up a groupware systems called the TeamRoom and be a "lurker" in the TeamRooms. This was to give the researcher an opportunity to be an observer of the activities that might take place between the collaborative participants who were geographically dispersed. As a result 'TeamRoom', was set up as a private space with password access, for the participants of Computer Science project and Floriculture Project to interact, communicate through mail and post documents on ideas and progress on their respective projects.

Logs of mailing list usage by the EU-India Network participants were accessed to follow the participants' contribution. A request for information regarding the number of people joined was sent to the mail base administrator once every three months in the first year and every six months for the next two years.

I also had access to six monthly reports published by the EU-India programme for the funding body and academic papers published in conferences and journals. Furthermore reports written by participants on their various visits were also used to collect data.

3.3.6 Analysis technique
Unlike comparative studies (Tayeb, M.H. 1988; Hofstede, G. 1991; Teagarden, M.B., Von Glinow, M.A., Bowen, D.E. et al. 1995; Hofstede, G. 2001) carried out on work-related values across cultures, my study was on collaborative processes in a cross-cultural environment where each case has two participants from different cultures working together on a project. The aim of my study was to identify the factors that impact upon academic collaboration in a cross-cultural environment. Since the participants of my study come from different countries and different working contexts it was essential to use an analytical technique, that would allow me to analyse the data to identify issues that might be cultural. The analytical technique used in this study was that of Grounded Theory approach.

Grounded Theory was used to code and analyse the data collected from the audit trails of reports, discussion forum, informal meetings, unstructured interviews and observation. Following the initial observation, questions emerged around, reasons for collaborating, culture of the working context
and the use of technology. Based on these questions a first set of interviews and observations were carried out. Interviews and observations carried out on four participants from two case studies were coded using the open coding technique. Strauss and Corbin (1990) explain that "open code is the part of analysis that pertains specifically to naming and categorising of phenomena through close examination of data" (p.62) Firstly concepts were identified from the interviews and observations and the concepts were grouped under provisional categories. The subsequent interviews and observation were used to extend these categories and sub categories. As the participants moved from one project to the another, interviews and observation were carried out on this new case to consolidate the identified categories and concepts as well as to find new ones. New categories and concepts had to be taken into account since the participants were approaching the new projects differently from that of the previous one. Coding and analysis was a reiterative process. Comparisons were made across four case studies and across cultures in the cases.

The categories that were identified from the case study are personal goals, working context, coordination and use of technology for the activity. Grounded Theory alerts the researcher to the fact that if the emerging categories relate to an existing theory then it could be used to explain or to extend that theory. Here the emerging categories and the relationship between them related to the components of the activity system proposed by Activity Theory (Engestrom, Y. 1987). Activity Theory provides a framework where activity is seen as a unit of analysis. Within this unit of analysis the relationships between the role of the actors, mediating tool and human mediation for the completion of the activity can be studied. In my study the various cases were involved in collaborative activities with participants from different cultures using the online technology as well as face-to-face meetings to mediate their activity in achieving their object. The coordinators were acting as human mediators to support and facilitate this cross-cultural collaboration. Furthermore Activity Theory recognises the context within which the activity is taking place which would play an important role in the selection of mediating tools and the practices of the actors within that context. Hence Activity Theory was seen as providing a suitable framework to map and discuss the collaborative activity. Since the study was collaboration across cultures the identified categories were mapped against the interacting activity systems model developed by Michael Cole (1988; 1998). As discussed in Chapter 2 the single activity system model (Engestrom, Y. 1987) was extended by Michael Cole (1988; 1998; Engestrom, Y. 1987) to incorporate cultural diversity in cross-cultural research. He proposes a minimum of two interacting activity systems as a model for cross-cultural research.
Although Michael Cole is proposing a model for cross-cultural research, I use this model to present my study of collaborative process in a cross-cultural environment. Since the participants in my study are situated in geographically distant and culturally different contexts, the above model allows the cultural context to be taken into account for the study. Using this model I map the activity system of the participants in their respective contexts and then compare the similarities and differences, which affect the collaborative process in this cross-cultural environment. This will bring about an understanding on the motive for collaboration, working context, the mediating instruments like computer mediated communications and human mediation for collaboration in a cross-cultural environment.

3.3.7 Difficulties
Studying the cross-cultural collaborative process has posed a number of difficulties. The difficulties have arose from the geographical distance, the rules of the EU-India programme to which the researcher and the subjects were attached to, and issues relating to gender, status and ethnicity of the researcher.

3.3.7.1 Access to the subjects
The participants in all four case studies, as mentioned earlier, are situated in India, Denmark and United Kingdom, while the researcher is situated in the United Kingdom. Hence participant observation of the Indian and Danish participants has been limited. The researcher was able to observe the activities of the Indian participants during a short visit at the beginning of the project and one one-week visit eight months later. The observation of the Danish participant activities was
carried out when the researcher visited Lygnby Denmark on her way to a workshop at a University in Aalborg. However, observation and interviews could not be carried out at regular intervals. During the second visit to India the researcher was travelling with the participant of the Computer Science case study from England. The participant from England was travelling to India to run a short workshop in two of the participating universities of the EU-India programme. Since his visit was an official one, the visit was carefully organized and the researcher was also included in this official capacity. As a result it placed limitations on the observation of the daily activity of the Indian participants.

3.3.7.2 Access to communication records
Due to the geographical distance any quiet periods in a project or lack of communications between participants have been difficult to verify. As a result the reasons for these lack of activity have to be gathered long after the period when the researcher was able to meet the participants face-to-face. The technology in India has been unstable. As a result the participants were limited to using only the email although a groupware system, the TeamRoom, was provided. The limited use of the online tools placed some restrictions on collection of data for the study. At the start of the study it was assumed that all the email communication by the participants involved in my study would be available to me. However, the main coordinator of the EU-India programme felt that it would not be possible to access emails that were considered “internal” such as emails dealing with finances. So I could not set up an automatic system where the emails would be copied to me. Under this umbrella of “internal” a number of email communications may have been lost which could have shown the breakdowns and repairs. Through informal interactions, I was aware of breakdowns that concerned coordination but the nature of the breakdown, the parties or the approach taken to resolve it were not divulged. As a result, data relating to breakdowns and their impact on the collaborative activity could not be gathered. The issue of privacy and limitation on access to “internal” emails of participants has restricted the observation of activities carried out over the distance. Consequently, data had to be collected through reflective interviews and informal discussions with the participants.

3.3.7.3 Gender and ethnicity issues
Being an Asian female in her thirties might have influenced the perception of the participants. As someone who projects a confident appearance, I felt that all the participants in the programme were forthcoming and honest with their views when interviewed. However, the Indian female participant, who is in her early forties, has aired strong views with regards to difficulties faced in the programme compared to the male participants in my study. Hence, it was difficult to assess whether
the male participants from India and Europe encountered similar problems to that of the Indian female participant or whether they would have been more open to a male researcher.

I also felt the Indian participants saw me as their ally more than the European participants in my study. This might have been due to the fact that the European participants had a history of working with the programme coordinator unlike the Indian participants. It could also be that as I am a Sri Lankan, the Indian participants expected me to understand their concerns better, while this was not an issue for the Europeans in my study.

3.4 Limitations

As mentioned earlier, due to the geographical distance the “quiet periods” on the projects could only be explained through interviews conducted long after the events. And this information gathered through interviews could not be verified. As a result the reasons for quiet periods and how they were overcome could not be witnessed.

A lot of the communication between participants was lost due to the fact that the participants did not use the emails as often as I expected them to and even during the times that they used emails they were not always copied to me. Consequently, it has been difficult to map every step of the collaborative process. It is important to point out that participants did use emails to communicate with the programme coordinators but these emails were not available for me to use as data since they were categorized as “internal”. As discussed earlier with regards to “insider” and “outsider”, as an “outsider” I could not get access to the emails that were classified as “internal”. Hence it was not possible to know, first hand, whether there were any breakdowns in communication between participants which had halted email communications and the collaborative activity. Furthermore if there were breakdowns in communication then did the coordination centre step in, to mediate or did the participants themselves rebuild their relationships? The role of the coordination in the programme and the various projects could not be explored thoroughly.

Being an “insider” and “outsider” in the EU-India programme might have influenced the response of the participants to my study. The participants might have viewed me as an “insider” in the programme, monitoring their activity rather than a researcher carrying out a study. Furthermore, as researcher attached to the team at the main coordination centre of the programme and being supervised under the programme, the participant might have seen me as a “spy” for the coordination centre.
Since there was only one female active participant in the EU-India programme, it was difficult to explore issues of gender, although this participant, according to her, has not had a smooth passage to arriving at the collaborative project that reflected her interest. As discussed earlier, it was impossible to know whether the male Indian participants would have aired their views, with regards to the collaboration, as strongly as the female Indian participant, if the researcher had not been a female or an Asian. Hence it was impossible to decipher whether the problems encountered by the female participant is an issue of gender or an issue of culture.

Some of the participants have at times imparted views and comments off the record and have wanted to maintain them as off the record. This has restricted on reporting issues that might throw some light on aspects of collaborative processes in a cross-cultural context.
CHAPTER 4. CASE STUDY(1) "FLORICULTURE PROJECT"

4.1 Introduction
The Floriculture Project was a collaborative activity between an academic from a university in Wales, United Kingdom and a researcher from a research institution in Delhi India. Daniel, the academic from the University of Wales College, Newport (UWCN) and Kalyani the researcher from the National Institute of Science Technology And Development Studies (NISTADS), Delhi, were involved in this collaborative project to carry out multimedia knowledge archiving in the Floriculture sector. This project comes under the dimension of Knowledge and Innovation in the EU-India Cross-Cultural Innovation Network.

The process of arriving at the Floriculture Project and the move from this initial project, after its short life, to new projects is presented. The reasons for moving from their initial project to other projects are also presented. The new projects, Bankura and Dairy, to which these participants have moved following the end of the Floriculture Project, are presented in chapters six & seven respectively.

Section 4.2 addresses the process of the Floriculture study being introduced to the EU-India programme, identifying the collaborative potential of the Floriculture Project for multimedia knowledge archiving and the phases of the collaborative activity. In section 4.3, issues that have affected the collaboration are presented and section 4.4 addresses the interaction and communication strategies used for the collaboration in this project. Section 4.4 presents the identified elements as a measure of success of the collaboration while section 4.5, presents the summary of the chapter.

4.2 The Project
At the start of the EU-India Cross-Cultural Innovation Network programme, Floriculture study was introduced by Kalyani, as a tool to introduce her work to others in the programme. The Floriculture study was carried out by Kalyani to identify the actors and the networks in the Floriculture Sector in Delhi. This study was the one of the activities of the National Institute of Science Technology and Development Studies (NISTADS), Delhi. When the study was introduced to the programme, Daniel, who was interested in knowledge archiving saw this floriculture scenario as an opportunity to carry out multimedia archiving. Consequently a collaborative project was set up based on the Floriculture study, to carry out knowledge archiving.
Section 4.2.1 presents the Floriculture study carried out by Kalyani at NISTADS. This is followed by section 4.2.2 which presents how Floriculture study was picked up by the EU-India programme to propose collaboration between Daniel and Kalyani, the people involved in the project (4.2.2.2). The phases of the activity is presented in section 4.2.3.

### 4.2.1 NISTADS and the Floriculture study

The Floriculture study was a study that had been carried out in NISTADS. Over the years the cut flower market in Delhi has grown from being a minor trade closely linked with religious purposes to a major market serving varying needs. Daniel describes the scenario,

> Here is a situation that over the period of years the sale of cut flowers in Delhi has moved from being a very minor activity associated specifically with particular culture flowers sold outside temples for religious purposes, to be in middle class industry of quality of life. The traditional flower growing as services for temple activities …… Garlands of marigolds and marigolds for religious activities that still continue. That is an active specialized market. *(Daniel - Interview Feb 2001)*

Because of the constant demand for flowers for religious purposes, growing flowers was yielding a stable market and attractive prices. A few years ago, technological intervention had taken place, introducing glass houses for flower growing which had encouraged semi industrialization of the cut flower market in India.

> What has happened is that there was a high technology intervention a few years ago to introduce cut flower productions on an industrial on a semi industrial scale in glass houses in India. High technology, high capital ventures and created what aimed to be an active market. *(Daniel - Interview Feb 2001)*

However, some of the farmers who were growing wheat or sugar cane as main crops opted to grow flowers as a rotational crop in their smallholdings, rather than invest in high tech glass house production. Kalyani points out how these farmers had read the rapid change in the flower market to make the transition from traditional crops to this new crop.

> The farmer was intelligent enough to read the market need for good quality of the flower. The trend was changing, people were using more and more flowers good quality of seed were available and people were ready to pay higher cost for the good quality of flower and the market was picking up. Now the farmer knows that the flower yield is increasing, so in place of growing wheat, he started growing flowers. In place of growing sugar cane he started growing flowers. *(Kalyani - Interview July 2000)*

Relying on their knowledge of farming of traditional crops like wheat and sugar cane, these farmers had gone into flower growing and learnt various aspects of cut flower production through trial and error. The produce was sold at a number of places. But during this time of surge in production the main outlet was an informally assembled pitch outside a temple in the centre of Delhi. This outlet was expanding very quickly with more and more farmers opting to grow flowers. Growth of this market had drawn the attention of the Ministry of Commerce in Delhi to commission a study of the market. The Ministry approached NISTADS and commissioned it to carry out a study.
We (the research institute) got a letter from Ministry of Commerce. They wanted to set up a whole
sale market in Delhi and a Netherlands company had approached them (to set it up). (Kalyani-
Interview July 2000)

As a NISTADS researcher, Kalyani carried out a study within her research institute on the
expansion of production and marketing of the cut flower market in Delhi.

It (the Floriculture Project) came in, first it appeared as a one-month assignment for the ministry of
commerce. They wanted us to judge what is the volume of transaction of flowers in Delhi. That was
the year 1994. It was a time when the (flower) industry was picking up in Delhi. (Kalyani - Interview
July 2000)

Kalyani got involved in the Floriculture Project when the Director assigned the study to her.
Kalyani’s interest did not reside in studying the growth of the market alone but on various other
aspects of this informal sector. Here the concept of informal sector is defined as,

A way of doing things characterized by (a) ease of entry; (b) reliance on indigenous resources; (c)
family ownership; (d) small scale operations; (e) labor intensive and adaptive technology; (e) skills
acquired outside of the formal sector; (g) unregulated and competitive markets. (The World Bank
Group 2002)

This will be the definition used when referring to informal sector in this thesis.

Kalyani explains on how she got involved in studying the Floriculture scenario in the informal
sector as follows:

And for that our institute was contacted and I was assigned by my director (to study the flower
market). Being as a researcher I could not just take finding out what is the volume of business in
Delhi. I got interested in other parameters also. (Kalyani - Interview July 2000)

As a result she carried out a comprehensive study of the market. Some of the questions that she was
looking to answer were:

Why this business is growing? What is its future? What are the sources of income? What are the
networks? like that. (Kalyani - Interview July 2000)

NISTADS enables the researchers to pursue their own research activities while carrying out studies
for the institution. Hence this study not only covered the Ministry’s requirements but also her
institute’s as well as her own interest in the area.

So that problem made me to take up a full fledged problem in floriculture and part of that I submitted
to ministry as per the requirement and the rest became our part of research interest which we
gradually published. (Kalyani - Interview July 2000)

During the time when NISTADS took up the Floriculture study, the flower sellers/growers did not
have a recognized physical space in the local market where they could set up stalls.

...at that time the main market for this was informally organized outside Hanuman Manthir (Temple)
in Delhi. (Daniel-Interview Feb 2001)
The involvement of Kalyani on the Floriculture Project did not stop with the formal aspect of the study. The flower sellers had informed her of the difficulties that they faced with the lack of a recognized space for them to carry out their trading.

From 1994-97 the number of wholesale sellers increased substantially in the Conought Place. But they were selling in an unauthorized way. In the morning at Conought place, the municipality was bothering them - throwing their stuff and asking for bribes and things like that. They (the flower sellers) were really in trouble and they did not want to move from Conought place, the reason being it is the central place with bus station and railway station. It is the central place in Delhi. (Kalyani-Interview July 2000)

Following the first phase of the study, which was commissioned for one month by the Ministry of Commerce, the Ministry wanted to carry out an in-depth study and commissioned the research institute to carry out the study for another year. Kalyani points out,

I tell you they gave me a month for the study. To get a feel, when we gave them a feel they were so happy that they (the ministry) asked us for a whole year round study of the market. So they developed some kind of faith in me. (Kalyani-Interview July 2000)

Kalyani had gone beyond just her study and helped the farmers set up a system which would support these traders. She had suggested that farmers form associations and voice any of their concerns to the Ministry. To achieve this Kalyani had organized a meeting at her institute.

I did help them out. I called all of them to my institute I gave them a platform and offered them a cup of tea and some snack in a big room where hundred people can sit. What are you problems? What could be the solution? Should they make some associations because there were no exiting linkages? So that was not part of my study sponsored by ministry but I gradually got interested. (Kalyani-Interview July 2000)

In an attempt to find a recognized space for the farmers to set up stalls in the market, Kalyani organised a meeting between the representatives of the farmers and the people from the Ministry of commerce.

Then I arranged one meeting with the chairman of the Ministry of commerce with these farmers and all the actors in my institute. They talked directly and I took one of the representatives to the department (of commerce) and the ministry. So that, some kind of informal regularisation (can be set up). (Interview Kalyani July 2000)

Since the formal set up does not allow the farmers to use the space that they were currently on, to set up stalls, it had to be organised through informal means.

The formal regularization cannot authorize the use of the pavements to sell on. Government can't authorize them but it was ensured through DTA and other source that nobody will harass them. They might have to pay little more charges for cleaning up in the early hours before the regular market starts. (Interview Kalyani July 2000)

Daniel knew about the success of the research carried out by Kalyani and the research institute. He recognised that the action research carried out has enabled the flower market to expand into a viable trade.
The initial project (undertake by the Indian research institute), was successful as it had achieved its impact on the sale of cut flower. It is now a seen thing all over Delhi. (*Interview Daniel Feb 2001*)

This Floriculture study was an established and on-going activity for NISTADS. However, for Kalyani, her curiosity with regards to the Floriculture sector has been satisfied through her study of the sector.

### 4.2.2 Collaboration on the Floriculture Project

The process of setting up the collaboration on the Floriculture Project in the EU-India programme started with addressing the collaborative potential of the Floriculture Project during a conference and workshop meeting held in Brighton and Wales. Following these meetings, the collaboration on the Floriculture Project was set up to carry out multimedia knowledge archiving. The time line of this process can be seen as follows:

<table>
<thead>
<tr>
<th>Floriculture Project timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sep 1999</strong></td>
</tr>
<tr>
<td>Kalyani presents her work on floriculture study at the workshop held in Brighton, UK that is attended by Daniel.</td>
</tr>
<tr>
<td><strong>Oct 1999</strong></td>
</tr>
<tr>
<td>Kalyani leaves for Aachen Germany to discuss possibilities of collaborating on innovation in the textiles industry</td>
</tr>
<tr>
<td><strong>Feb 2000</strong></td>
</tr>
<tr>
<td>Floriculture project and the participants agreed on at a workshop at Wales, UK. Kalyani did not attend this workshop.</td>
</tr>
<tr>
<td><strong>April 2000</strong></td>
</tr>
<tr>
<td>Daniel visits the floriculture market and the fields around Delhi. Kalyani acts as translator and mediator for the capture of footage for multimedia archiving.</td>
</tr>
<tr>
<td><strong>June 2000</strong></td>
</tr>
<tr>
<td>Footage for multimedia archiving is poor quality and the activity is shelved. Re-shooting is not considered, as it would contaminate the data for research</td>
</tr>
<tr>
<td><strong>Other projects capture the attention of the participants, where personal goals may be achieved. Kalyani and Daniel move to consider Dairy and Bankura projects respectively.</strong></td>
</tr>
</tbody>
</table>
4.2.2.1 How did it come about?

The Floriculture study was presented by Kalyani in one of the first workshops/conference organized by the EU-India Cross-Cultural Innovation Network programme in September 1999.

Floricultural project was initially presented as a paper by Kalyani from NISATDS in the sessions of in one of the conferences (organized by the EU-India Programme). (Daniel-Interview Feb 2001)

Daniel who attended the September conference, was interested in studying the knowledge transfer in this informal sector. Informal sector here refers to a sector where structures pertaining to its activities are not recorded and formalised in the traditional industrialised manner. Daniel was also interested in multimedia knowledge archiving, where the tacit dimension of knowledge such as the practices of the artisans or farmers is captured through multimedia recording and archiving. Hence, Daniel saw the Floriculture sector as an opportunity to map and formalise the structures through multimedia knowledge archiving while learning aspects of knowledge transfer.

Since the expanded market had been around only for a few years and the farmers who have come into the cut flower market were relatively new, this seemed like an ideal scenario for Daniel to carry out his study. This scenario aligned well not only with Daniel’s research interest but also to train students in knowledge archiving.

First of all it fitted in with the research, my research interest in knowledge archiving but it was also a useful case study for engaging the Masters students and in technology transfer would be of value to other intensive tacit knowledge aspects. (Daniel- Interview Feb 2001)

At the same time, Daniel explains that there were issues such as, quality assurance, transport and presentation of the flowers in the market, that need to be looked at although the cut flower market study by NISTADS had been a success in drawing the market to the fore front.

There are things, which could have been done to improve it, like in terms of quality, in terms of transport, in terms of presentation so there were grounds in examining the knowledge networks involved. (Daniel - Interview Feb 2001)

The Coordinators of the EU-India programme saw the Floriculture study by NISTADS presenting an opportunity to pursue some of the programme’s goals in the area of Knowledge and Innovation. Hence, following the interest shown by Daniel for knowledge archiving through multimedia the Coordinators of the EU-India Cross-Cultural programme assigned this Floriculture study as a collaborative project between Daniel and Kalyani. Thus the collaboration on the Floriculture Project was set up.

4.2.2.2 What was the goal?

The goal of the Floriculture Project was to learn how to carry out multimedia knowledge archiving of the actors in the Floriculture sector in Delhi and to produce a multimedia CD-ROM for
information dissemination among up and coming flower growers. Through the multimedia knowledge archiving, Daniel was interested in studying the knowledge transfer within this informal sector.

Following the week of the Brighton conference in September 1999, the EU-India Cross-Cultural Innovation Network programme organised a workshop at UCWN. At the Wales workshop, the coordinators along with Daniel decided that the collaboration on the Floriculture Project would be an ideal scenario to build a Multimedia CD-ROM for knowledge archiving and use this multimedia product as an information dissemination tool among the flower farmers.

While this Wales workshop was taking place, Kalyani was visiting the Technical University, Aachen, Germany, one of the participants of the EU-India Cross-Cultural Innovation Network programme, exploring possibilities of collaboration on technological intervention in the textile sector. The main co-ordination centre had organized this visit. As a result, Kalyani was not present at the Wales workshop and was not aware of the collaboration that was set up between Daniel and her on building a multimedia CD-ROM.

...This (making the film) was decided in Wales where I was not present. (Kalyani- Interview July 2000)

Since Kalyani was not present at the Wales workshop, where the collaboration on the Floriculture Project was finalised, she did not have the opportunity to discuss and express her views on the collaborative activity. When Kalyani became aware of this collaborative project, she said that the CD-ROM or the multimedia film would help to disseminate information from the experienced flower growers to the newcomers to the market.

Yeah, this will help. Definitely, because once this film is ready it can be shown to the other places. how they (the farmers) went about how they ventured into this (growing flowers as a crop), and how they are managing this (activity) . Once they make a recording of that, then it can be shown to other places. (Kalyani- interview July 2000)

However, Kalyani did not see any research activity she could carry out in this collaborative project or learn anything that was of interest to her as she sees collaboration as a process of learning from each other on joint activities. Furthermore this multimedia knowledge archiving was a joint activity at the level of accessing the actors in the sector and interviewing them.
4.2.2.3 Who was involved

Along with Daniel and Kalyani collaborating on the project, Masters students from Delhi University were also identified to collaborate on building the multimedia CD-ROM for knowledge archiving and information dissemination.

When the Floriculture Project was decided by the EU-India Cross-Cultural Innovation Network programme, it was also decided to involve Delhi University in the design process of the CD-ROM. This was going to involve collaboration between Daniel and the postgraduate students in Delhi University South Campus.

It (Floriculture study) was a very interesting study which seem to offer some (opportunities to design multimedia products for knowledge archiving, this is the reason for) my involvement for making the project and one of the possible collaborations between ourselves (UCWN) and the research institute (NISTADS) and also Involving Delhi University in collaboration. (Daniel - Interview Feb 2001)

Daniel wanted to get the Masters students from the University of Delhi involved in knowledge archiving, technology transfer and designing the multimedia production. He was hoping that training the Masters students on this would help them carry out future studies and archiving in similar areas. Daniel's idea was to collaborate on training and supporting the Masters students in
achieving this and also to design a CD-ROM, which will be culturally appropriate. However, this led to the EU-India Cross-Cultural Innovation Network programme's main and Indian co-ordination centres organizing a short course on multimedia design for the Masters students, which was run by Daniel.

One thing was slightly different from what, I thought, was intended, we pretty much set up a short course in Delhi University for Masters students. This study on floriculture, the flower market, would be from that (national and regional) culture but acquisition of resources, shooting a video and recording would be set in the context of our own design approach. (Daniel - Interview Feb 2001)

Since the CD-ROM was aimed at the flower growers in India, involving designers from India would also be a way of dealing with the cultural issues of design. However, as Daniel has pointed out the gathering of materials and producing the CD-Rom would be guided by the design approach.

The collaboration between the students of Delhi University and Daniel at UCWN did not take place because the idea of designing for knowledge archiving was new to the Masters students at Delhi University and the time factor for training them was limited. If there was to be training then it had to be carried out by Daniel as Delhi University did not have anyone who could train the students on Multimedia Knowledge archiving. Furthermore the University did not have the resources, such as film equipment and design software, to carry out multimedia production. It is difficult to conclude whether these issues might have been addressed and overcome if the Floriculture Project had not come to an end after its short life span.

4.2.3 The phases in the Floriculture Project
This section presents the phases of the activity in the Floriculture Project. The phases are divided into six months periods from the day of the setting up of the collaborative activity in the project.

4.2.3.1 Phases: First six months (Sep 1999- March 2000)
Since identifying the Floriculture Project as a potential scenario for collaboration between Daniel and Kalyani for multimedia knowledge archiving, the first activity on this project took place at the end of the first six months of setting up the collaboration. However, in the meantime the main co-ordination centre had instructed Kalyani to identify the nodes of Floriculture.

For action plan I have to identify the nodes of floriculture. That is an assignment but not of dissemination what is shown on the work plan by the coordination centre. I identify the nodes and the conceptual side of it. (Kalyani- Interview July 2000)

The collaboration on the Floriculture Project was set up after the workshop in Wales, September 1999. Daniel visited Delhi, India in March 2000.
Daniel came and I gave him a little short note on that (how the floriculture activity had emerged in the research institute), this is what we concluded (a multimedia film would be useful for dissemination of information among flower growers) from the visit. (Kalyani - Interview July 2000)

During this visit, Daniel was taken to see the flower markets in Delhi. Daniel took this opportunity to carry out interviews with the traders and film the activities.

In fact what happened was a more opportunistic visit to flower market on two consecutive days which produced a lot of very interesting interview material…. (Daniel - Interview Feb 2001)

To give Daniel a better and more comprehensive picture of the activities in the Floriculture sector, following the visit to the markets, Kalyani had taken Daniel to see the flower fields located just outside the city.

…I took him to a place called Katholi. Katholi is a place, which has changed the scenario of the Delhi Market. This is a belt which is growing an x amount of tube roses. Until 1980s or later 1990 this bulk amount of tube rose was coming to Delhi from Calcutta. Now this Katholi, 150 km from Delhi, is getting very famous. They are producing so much of tube roses. (Kalyani - Interview July 2000)

Here too Daniel had taken the opportunity to interview and film the farmers and actors in the Floriculture sector for the Multimedia knowledge archiving and for the production of a CD-Rom for information dissemination. This visit to the flower fields enabled Kalyani to take Daniel to the nearest village to interview and observe the flower growers

We visited one of the villages and talked to flower-growers in that village. (Daniel - Interview Feb 2001)

To interview the flower growers, Daniel had to rely on Kalyani to translate the questions and answers as the flower growers speak Hindi. Hence, the collaborative element between Daniel and Kalyani in this project was, Kalyani introducing the field and the actors for Daniel to carry out his study and act as a facilitator and mediator for gathering materials for multimedia knowledge archiving. She was seen as a mediator for knowledge transfer.

Visiting the farmers in their fields gave Daniel the opportunity to see the context in which these farmers worked in and the techniques employed in their production of cut flowers. This was an important element to his study of knowledge transfer and to carry out multimedia archiving of the practices.

Got a good picture of the context in which they work, they way in which they work, in their families involved, the problems that they faced in marketing their products and the way in which how the crops are actually set out in the fields and harvested. We got a very good view of the techniques employed. (Daniel - Interview Feb 2001)
Daniel was able to see how the farmers had adopted their existing resources to the requirements of the new kind of crops that they were growing. This is one of the aspects of knowledge that Daniel was interested in capturing.

We saw adaptation of old farm, domestic residence, the ruins and so on being skilfully adapted to new purposes such as storage, cold storage, dry cut flowers, sorting out flowers. We could get a good picture as to what was going on. *(Daniel - Interview Feb 2001)*

Getting the material for the multimedia film was not the problem as far as Daniel was concerned. The problem was the lack of pre planning regarding scripting and technical issues regarding filming with a hand held camera. As a result the media footage was of poor quality although sociologically interesting.

*(We) produced a lot of very interesting interview material but without scripting and without time editing we had very little quality media footage. We had a lot of stuff from the sociological point of view there, once extremely interesting but the media quality was not ....(good). *(Daniel - Interview Feb 2001)*

Hence, the footage could not be used for any multimedia production.

### 4.3 Interaction and communication

As the participant in this collaborative project were geographically dispersed their interaction and communication were supported through face-to-face meetings and on-line technologies. Face to face meetings have been formal or informal meetings organised by the EU-India programme, while the online technology provided for interaction and communications were, along with the emails, the Team Room as a private domain and the Mailing list as a public domain.

#### 4.3.1 Formal and informal face-to-face meetings

Most of the face-to-face meetings have taken place during workshops organized by the EU-India Cross-Cultural Innovation Network or during the days around these workshops. Formal face-to-face meetings took place around workshops and conferences while informal meetings were organised by the participants themselves during exchange visits although these meetings were supported by the EU-India programme.

#### 4.3.1.1 Brighton England in September 1999

The main co-ordination centre in Brighton organized a week of workshop and conference, which was attended by Daniel and Kalyani with the rest of the participants of the project. During this event Kalyani presented her study on the Floriculture market. Daniel was interested in the study and the possibility of collaborating to carry out multimedia archiving to capture the tacit dimension of knowledge while studying the knowledge transfer within this informal sector. However, there were no discussions between Kalyani and Daniel on the possibility of setting up collaboration. There
were also informal meetings between participants trying to identify areas in which they would like
to set up projects. In these sessions an academic from the Technical University Aachen Germany,
who is also a participant of the EU-India Cross-Cultural Innovation Network, discussed the research
that had been carried out in the German textile industry. Kalyani was interested in finding out more
in this area and as a result the co-ordination centre organized a short visit to Aachen. While Kalyani
was in Aachen the rest of the participants of the EU-India programme visited the University of
Wales College Newport, Wales for a one-week workshop and preparation of work packages.

4.3.1.2 Wales in September 1999
Following the September conference in Brighton, the EU-India programme organised a one-week
workshop in UWCN. During this workshop in Wales, Daniel presented his work on multimedia
knowledge archiving he had carried out in the aeronautic industry. He said that this was his interest
and would like to carry out similar knowledge archiving in other sectors. The co-ordination centre
suggested that he could work with Kalyani on the Floriculture Project as he had expressed interest
in it during the Brighton workshop a week earlier. As a result this activity was penned into the work
packages.

4.3.1.3 Delhi, India in March 2000
The EU-India programme organised an exchange visit for Daniel to visit India in March 2000, to
enable him to start work on the Floriculture Project while he ran a short course on multimedia
design. Daniel visited Delhi India six months following the Brighton workshop. During this visit
Daniel organized and delivered a short course on multimedia design and knowledge archiving for
the Masters students at Delhi University. He also made visits to the flower market and carried out
interviews and filmed the florists and their activities for his study. In addition to going to interview
the flower sellers at the market, Kalyani had arranged for Daniel to visit a field in a village close to
Delhi where flowers were being grown. Daniel carried out his interviews and filming in the field
and at the village. During this visit Kalyani had offered to help Daniel with the transcribing which
was then carried out in India.

Two months following this visit and collection of data, the Floriculture Project could not be taken
any further, due to poor quality footage and difference of interests among the collaborative
participants.
4.3.2 On-line communication and interaction

On-line communication tools like the mailing list and the Team Room, were provided as communication mechanisms for the participants on the collaborative project. Daniel in Wales and Kalyani in India have a personal computer on their desks from where they can gain access to their email servers and the Internet. They also have access to telephone with personal extension numbers.

4.3.2.1 Email

Email has been the main mode of communication for this project when the participants were not able to meet face-to-face. Daniel uses email as the main communication tool with his students and colleagues in his day to day activities.

(In our university) we use email for accessibility and you see (pointing to the system he has open) the online tutorial but we don't have a formal system. Any student knows that they can contact me (through email) also where appropriate face-to-face. ... I am easy to get by email. (Daniel - Interview Feb 2001)

Kalyani has a Yahoo and the research institute email account. However, there has been limited use of emails to communicate in this project. According to Kalyani she had mailed Daniel asking him if he needed any help and the situation with the multimedia footage he had gathered during his visit to India in March. Daniel responded to this email query by saying that he was working on the multimedia CD-ROM. This seems to be have been the only email interaction they had with regards to the collaboration on the project.

As discussed in the methodology chapter, none of the participants copied their emails to me hence I have had to rely on the information provided in informal conversations and interviews. It is through informal conversation that I came to know that Kalyani preferred to use the telephone to email.

Kalyani primarily uses the telephone to communicate and interact with her colleagues in the research institute. In an informal conversation with me she said that if she wanted to contact someone within her institute she would first use the telephone to call them and only if they were not at their desks would she send them an email. Emails are also sent when there has been an agreement on dates for a meeting or to confirm any verbal agreement.

4.3.2.2 Mailing List

Use of the list

Since the EU-India Cross-Cultural Innovation Network's first workshop and conference was held at the University of Brighton, Daniel was involved in the activities. As a result he knew about the
mailing that had been set up for the programme and joined it. As a facilitator, I used the mailing list to post interesting and relevant news received through other mailing lists. Daniel had responded to it saying that it was useful to him. Kalyani was informed of the list and was advised to join. But she has not joined the list although she has been subscribing to other lists intermittently.

4.3.2.3 Team Room

Launching the Team Room
To enable dispersed groups to interact and discuss issues on their collaborative activity, the Team Room was set up and the participants informed of the group’s username and password. They were told that although as a researcher I would like to follow their interaction on this domain, I will not be participating in the discussions. To know whether the participants were happy with the use and layout of the team rooms, they were also asked to comment and suggest any changes or preferences to the use of the team room. Since I did not hear from them one way or other, a few months after the launch I mailed them again with the same information but still did not hear from them. So it was assumed that they were happy with the environment or did not find the environment useful.

Use of the Team Room
Unfortunately the team room was not used at all. This might have been due to the fact that the Floriculture Project did not have any future on the basis of collaboration after the first round of field visits. Due to the lack of use of this space it was not set up for any of the other projects except the Computer Science Project. All the other projects relied heavily on email for communication and interaction, when there was no possibility of face-to-face meetings.

Hence, there was limited interaction and communication while the participants were not able to meet face-to-face. This had slowed down the progress on the collaboration and affected the motivation, especially Kalyani’s since from her point of view the Floriculture Project did not reflect any of her goals.

4.4 Some of the Issues that Affected this Collaboration
Issues that have affected this collaboration have been the participants’ different work commitments in their respective institutions and the institutional cultures, different personal interests and the lack of planning with the field activities.
4.4.1 Work commitment

Daniel working in a University College is expected to carry out research, teach and address administrative commitments. Hence time allocated for research is around one third of his working hours. As he explains:

Most of my time is taken up by students and course development. As head of research I am responsible for research development part and that is problematic. So I am setting up structures for secondary staff. (Daniel - Interview Feb 2001)

Being the Head of Research and Enterprise and the daily commitment of teaching have limited his time for research activities. As the Head of Research and Enterprise he is expected to generate income for the school through various projects.

The British council for instance, they come to us as the consequence of us working with them on various constancy and so on. (Get involved in) various things like speaking, entrepreneurial ventures. we are doing some stuff for General Electrics. Just completed a project for the Gwent Police - a photographic calendar on A way and life of Newport ...So a lot different things. It is an Institutional activity. That is my other title "Head of Research and Enterprise" (Daniel - Interview Feb 2001)

Hence Daniel's commitments in his institution impacts on his personal research activities. Here it is important to point out that, the research activity carried out by Daniel in the EU-India programme is seen by him as personal research. He explains:

Research, personal research takes a back burner. And that is a problem I have. This working on editing this stuff something that I have to fit into slots whereas previously fifty percent of my time research time, so the last three or four months it has been quite a game. (Daniel - Interview Feb 2001)

Unlike Daniel, Kalyani's time is directed only on research activities since NISATDS is a research institute. Research activities in the institutes are very much based on the researchers' initiatives and their directions. Researchers seem to have a free hand in accepting or pursuing any research activity. The institute provides the researchers with the infrastructures to carry out any research that they would want to do.

Whatever way I want to study. (The institute gives) no guidance (as to methodology or direction). Identification of problem through to the completion, it is my task. Successes and failures are mine. Institution is going to provide me with the infrastructure of the support and time. Phasing out time everything is mine. (Kalyani -Interview July 2000)

Sharing or discussing the research projects among colleagues in the institute is also left at the discretion of the researcher.

We do discuss things among our circles but there is no binding. I may keep it close to my chest or give a seminar to get the feedback. (Kalyani -Interview July 2000)

Consequently, the research projects that Kalyani identifies herself with in the EU-India programme can be seen as NISTADS activity as well. Hence, Kalyani can devote her entire time on the research activity unlike Daniel. Limited time on the research has made Daniel's response to Kalyani's queries
slow. This has frustrated Kalyani, as there was no activity taking place and as researcher in NISTADS she felt she was not participating in any research. Furthermore, the collaboration on the Floriculture Project did not reflect any of her interests.

4.4.2 Participants' goals

When Kalyani was introduced into the project she was seen as a biotechnology expert and her interest was assumed to be on tissue culture. Kalyani has a Ph.D in Botany and her understanding of biotechnology had led her into tissue culture. Over the years, Kalyani has acquired the tools not only to carry out technological assessment and networking but also to carry out research in formal and informal sectors. As a result she has addressed various issues that are impacted upon during technological change.

See I have been looking into the issue of entrepreneurship development, technology development, technology diffusion, institutional interaction role of the government, which are all together play an important role in the technological change. (Kalyani - Interview July 2000)

Currently, she identifies her research interest as residing in technology and social change. She explains,

My basic area is technology and social change. Earlier I worked in the biotechnology and I worked in the tissue culture I worked on the Seri culture (Silk worm raring) and then I worked in the floriculture, so the sectors keep changing and it is very difficult to generalize the process of innovation in any case. (Kalyani - Interview July 2000)

She points out that when sectors change issues do not get restricted to that sector alone but there are also the issues like different regions and countries where the sectors are located. Studying the technological impact on the Sericulture sector and moving to study the Floriculture sector would present issues that are relevant to each sector but if the Floriculture sector is studied in Delhi it will yield issues which might be different to the that sector in Punjab. Hence she argues that

(It) varies from sector to sector and region to region. By taking more and more specific studies with the sector and going across the country and going across the discipline means, that on one side there is the well organized tissue culture, there is the high tech bio technology and on the other hand it the uneducated or informally educated farmer with tacit knowledge doing the floriculture (Kalyani - Interview July 2000)

Hence she argues that she is interested in carrying out studies in various informal sectors to identify the actor, network and the issues that impact on these sectors. She is also interested in carrying out studies across cultures and contexts. Furthermore she was also interested in learning new methodologies through the EU-India collaboration.

What other thing I was looking for was this, Academic from Italy has developed a certain methodology of networking- grid method. Leo from Denmark also has some ideas. ... I want to learn from them. Because when we go for a collaborative projects there needs to be some bit of new (ideas and approaches) rather than data but of the technique that I am interested in. (Kalyani - Interview July 2000)
Kalyani goes on to say that she is interested in the Floriculture sector but not the particular line proposed by the Coordinators in the EU-India programme in the Floriculture Project.

It (the proposed Floriculture Project) does interest me but it does not continue my line of interest from the research point of view (Kalyani - Interview July 2000)

Furthermore the coordination centre had assigned the role of conceptualising for the Floriculture Project to identify the nodes in the sector. Kalyani was not interested in conceptualising as she wanted to work actively as a field researcher and she did not see the Floriculture Project having the potential to offer her the opportunity to pursue her interests.

Unlike Kalyani, Daniel was interested in multimedia knowledge archiving and saw the Floriculture Project as an opportunity to carry out a study on knowledge transfer and the tacit dimension of knowledge through multimedia archiving.

We have an established market (cut flower market), which had not been going for very long and many of the individual actors who were engaged were identifiable and therefore available for interview. So it was quite clear that it was good for knowledge archiving,.... First of all it fitted in with the research, my research interest in knowledge archiving but it was also a useful case study for engaging the Masters students in technology transfer. It would be of value to other intensive tacit knowledge aspects. (Daniel Interview Feb 2001)

This scenario aligned with Daniel's research interest to carry out a multimedia recording as part of knowledge archiving. Along with his interest in multimedia knowledge archiving he was also interested in involving the Masters students from Delhi University to train them to capture the tacit aspects of knowledge through multimedia archiving. With regards to Daniel's interest, he wanted to get multimedia material for a knowledge archiving exercise and the Floriculture Project presented him with an opportunity to fulfill his interest.

I really wanted to capture some material on video and tape which then can be used in constructing some sort of Multimedia record. (Daniel - Interview Feb 2001)

In the Floriculture Project collaboration, Kalyani had seen herself only as a mediator since the main co-ordination centre which had set up the project had actively assigned the role for her in the collaboration.

In identifying the participants and a project, the main co-ordination centre had assumed that since Kalyani was coming from a tissue culture background she was still interested in that area alone and had assigned her to the Floriculture Project. As a result they had assigned her to collaborate on the Floriculture Project without consulting her and getting to know her interest and personal goals with regards to participating in the EU-India programme. From Kalyani's point of view her active participation on the Floriculture Project had come to an end when she had completed her study for
NISTADS. There was no possibility of extending the project through either NISTADS or the EU-India Cross-Cultural Innovation Network programme. She points out that her interests lie elsewhere.

What I have been doing whatever the sector I have been taking I have been addressing research-to production-to marketing. So I got interested in it (the Dairy Project). When last year Leo came and collaborations were spoken, I showed my interest for the Dairy project. Leo wrote to me if this is my plan fine and we shall be meeting me if anything is required. In the mean time I got a reply from the Italian participant also on the Dairy Project. Then I prepared one of my own two page paper, in collaboration with the European partners this is the way with India I will be interested in PAU(Punjab Agriculture University). (Kalyani - Interview July 2000)

Kalyani felt that there was scope for her to carry out field study and pursue her goals of wanting to study a new sector by participating in the Dairy Project. Consequently she moved to the Dairy Project as the Floriculture Project was coming to an end.

4.4.3 Limited resources

Having gathered the material and transcribed the interview, which was conducted in Hindi with Kalyani as the mediator, Daniel had to take it over to Wales to be edited. As a result translation from Hindi to a working English language text has been a difficult task for Daniel.

One of the issues we have here is that we had a lot of material to do editing. We have transcribed the tape but from my point of view, to needed to be translated from Hindi. And I don't have a good English Language Working text. And that is something that we have yet to organize. (Daniel - Interview Feb 2001)

Due to limited resources, such as translator and transcriber, along with limited time available as an academic the progress of the activity slowed and in turn affected the motivation. Along with this difficulty the video footage that was gathered was of poor quality. Lack of planning had affected Daniel’s data collections for multimedia knowledge archiving. He explains:

We could get a good picture as to what was going on. But unfortunately because of the lack of prior planning we could not get a picture of, a sense of the knowledge network of the how the skill or how the insight to do these things had originated and propagated. (Daniel - Interview Feb 2001)

Though there were opportunities for Daniel to carry out another round of interviews with the same farmers, Daniel did not pursue it as he felt that the data would be contaminated. Since Daniel was studying knowledge transfer and capturing the tacit dimension of knowledge, i.e. the practices of the farmers, through multimedia archiving, repeating the interviews with the same farmers would trigger responses that might have been re-constructed by the farmers hence not providing the real picture of the scenario. As a result he had to try and use the original poor quality footage that he already had.
Although Daniel was faced with these limitations, such as limited time, translators and poor quality multimedia footage, he did not inform Kalyani about them. Hence she explains,

(During his visit in March 2000) He did make the recording and took it away and I did ask him if he needed any further help I have not got any feed back after that. He gave me a reply that he is in the process of making (the multimedia film) and will let me know. (Kalyani -Interview July 2000)

Since the visit and the response from Daniel saying that he was in the process of making the film no further communications had taken placed between the participants.

Following these limitations faced by the participants, the Floriculture Project come to an end eight months after being set up as a collaborative project between Daniel and Kalyani

4.5 Success of the collaboration in the projects
This section presents the elements that were identified across the case studies to represent success and failure of the collaboration in the project. This success is measured against these elements

The success of the collaboration is seen in terms of fulfillment of the project’s outcome, personal goals, maintaining the links that have been established, extending the current project, products and publications.

Since the collaborative projects were set up to achieve certain outcomes with regards to the collaboration, this was seen as a one of the elements to measure success of the project by. As the participants had joined the collaborative activities viewing the activities as an opportunity to achieve some of their personal goals this was also taken as one of the elements. Once a working link is established and trust and understanding is built, then it is assumed that these participants may want to maintain their links until they find a suitable project to work on, in the future. Hence this maintaining of links is also seen as an element to measure success of the collaboration. Furthermore, if the activity in the collaborative project had been stimulating and exciting for the participants that they would decide to extend the project by taking it in a new direction or maintaining the activities then this was seen as an element of success of the collaboration. The production of tangible products such as multimedia as well as any written publications were also seen as a measure of success. These were seen as by products of the collaborative activity.
In this project none of the categories of the success were met. For instance, in the Floriculture Project the outcome was going to be a multimedia archive of the work practices of the flower growers in Delhi which was not achieved.

The personal goals of the participants were not achieved as Kalyani’s personal goal to carry out research in sectors other than the one she had already worked on was not represented in the objective of the project. She was also interested in learning new methodologies and saw the EU-India programme as a place where she could achieve this. However, the Floriculture Project did not provide her with the opportunity to do so. In contrast, Daniel’s personal goal was represented in the Floriculture Project, however, he did not have the materials to achieve his goal of carrying out multimedia knowledge archiving to capture the tacit dimension of knowledge in the Floriculture sector and carrying out his study on knowledge transfer.

Since both of the participants’ interests and personal goals were different, they have not maintained any links in relation to identifying new projects.

As the material collected by Daniel was of poor quality, the multimedia product was not created and there were no publications with regards to the activity in this project. Kalyani who had carried out the study for NISTADS had already published issues that she was interested in and as Daniel did not have quality footage and good translation he was not able to carry out his study on knowledge transfer.

Hence, on the basis of the above categories the collaboration on the Floriculture Project was not a success. However, one of the reasons for this might be the fact that the participants in this project were brought together to collaborate by the coordination centre and not by their own choice. Another reason might be the fact that this was the first project to be identified under the EU-India programme and was set up to feature prominently the objectives of the programme and not the participants’ goals. A third reason could be that this project was also driven by the urgency of
having to produce results for the funding body, the European Union which did not allow time for the identification of common interests and the development of relationships.

4.6 Summary

The Floriculture Project was a study that the National Institute of Science, Technology and Development Studies (NISTADS) had been involved with, for a long time. Kalyani had carried out a major part of the research and she introduced it to the EU-India Cross-Cultural Innovation Network Programme. Daniel who was interested in multimedia knowledge archiving saw this project as an ideal opportunity to carry out his study on knowledge transfer and capture the tacit dimension of knowledge through multimedia archiving. When Kalyani was informed of the project she felt that there was no scope for her to pursue her interest which is technology and social change as her study on floriculture had covered that element already. Her personal goal was to carry out studies in different informal sectors to identify the actors and networks within them. She also saw the EU-India programme as providing her with the opportunity to achieve her personal goals of learning new methodologies for studying the informal sector within and across cultures. The personal goals of Kalyani were not reflected in this project. However, Daniel’s goals were reflected and he did collect data for his multimedia knowledge archiving but due to lack of pre-planning, the quality of media footage was poor. This forced Daniel to abandon the knowledge archiving activity in this project. As a result the project could not progress any further.

The different work practices and contexts have impacted upon the collaboration on this project. Daniel coming from a university where his primary commitment is to teaching. He is also expected to carry out administrative activities. This sidelines the Floriculture Project. Unlike Daniel, Kalyani’s institute is a research institute and her primary activity is to carry out research. The Floriculture Project is a study that Kalyani had undertaken and she was also free to identify and conduct research in any area that she felt fit. As a result for Kalyani the Floriculture collaboration with Daniel was a main activity. Since she could not see any scope for furthering her interest or achieving her personal goals in this project, she was frustrated.

The Floriculture Project was provided with a password protected Team Room to discuss and post their ideas. However this forum was not used from the day it was set up. Email has been the main mode of communication when there were no opportunities for face-to-face communication. However there has been very limited use of email in this project, perhaps due to the fact that the participants in their daily activities prefer one medium of communication over another and this
preference was carried into this project. There was a preference to the use of one technology over another by both participants. Daniel preferred to use email for his daily interaction and communication with his colleagues and students in his daily activities while Kalyani preferred to use the telephone for her daily interactions. This preference has impacted upon the collaborative process in this project. Hence, most decisions were made during face-to-face interactions, which in this case was the one visit that Daniel had made to India in March to collect data.
CHAPTER 5. CASE STUDY(2) “COMPUTER SCIENCE PROJECT”

5.1 Introduction
As the EU-India Cross-Cultural Innovation Network programme developed one of the activities that evolved was the collaboration between academics from an English University and an Indian University. This case study addresses various aspects that the academics, Joe from Brighton University and Ajith from Delhi University faced in setting up the Computer Science Project to teach networking to their students. This project comes under the EU-India programme’s dimension of IT and Innovation.

In this case study the participants come from different working contexts which are situated in different cultural contexts. Although both participants come from higher education institutions, because of the cultural contexts, the institutes would have different work practices and expectations. These differences would impact upon the collaborative activity in this cross-cultural environment.

This chapter presents the collaborative process of the Computer Science Project as a narrative of the events and issues. An in-depth discussion of the issues raised here will be carried out in Chapter Eight.

In this chapter, firstly, section 5.2 presents the process of identifying the project and phases of its development. This is followed by section 5.3, which addresses the issues that have impacted upon the collaborative process in the Computer Science Project. In this section the impact of different culture of the institutions (5.3.1& 5.3.2), and work commitments (5.3.3) of the participants are presented. The interaction and communication used in the collaborative activity is also presented in section 5.3.4. Section 5.4 presents elements identified as the measure of success of this collaboration. Finally in section 5.5, a summary is presented.

5.2 The Project
This section deals with the process of identifying the participants and setting up a cross-cultural project. Firstly, it addresses, how the project came about, who will be involved, why they chose to set up the project and what they hope to achieve. Secondly, a brief summary is given of the activity that took place from the start and for the next year and a half.
5.2.1 How did it come about?

**Computer Science Project timeline**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 1999</td>
<td>Joe attends the conference and workshop held in Brighton by the EU-India programme and gets to know about the programme. Ajith is not present, as he does not know about the programme.</td>
</tr>
<tr>
<td>Feb 2000</td>
<td>Joe visits Delhi India and runs a training course. He also presents a self-organising system, he had designed as part of his Ph.D. work. Meets Ajith and discover that they have similar interests. They are encouraged to collaborate by the co-ordinators and they decide to set up the computer science project to teach network technologies.</td>
</tr>
<tr>
<td>April 2000</td>
<td>Joe designs a prototype website for the project and asks for comments. Joe also starts a discussion with Ajith on the name for the site.</td>
</tr>
<tr>
<td>June 2000</td>
<td>Ajith is happy with the design but does not respond with regards to the name and further designs.</td>
</tr>
<tr>
<td>July 2000</td>
<td>Joe and Ajith collaborate on writing a joint paper on their project for a conference. Ajith writes the paper and Joe comments and adds his arguments.</td>
</tr>
<tr>
<td>Sep 2000</td>
<td>The paper at the conference is accepted.</td>
</tr>
<tr>
<td>Feb 2001</td>
<td>Ajith visits England to present the paper that he and Joe had written, at a conference. During his visit, he meets Joe to discuss and fine-tune the computer Science project. They identify the phases of the projects.</td>
</tr>
<tr>
<td>Feb 2001</td>
<td>Joe visits Ajith in Delhi and discusses the next stage of the computer Science project. They discuss the issues that have slowed down the progress and redefine the activity. They also discuss technology for instruction and evaluation. A proposal for funding to continue working on this collaboration is also discussed.</td>
</tr>
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As presented in the above timeline diagram, Joe was introduced to the EU-India programme during the workshop and conference held in September 1999 at Brighton. But the "Computer Science Project" came about when academics from Europe, including Joe, were visiting Delhi University, in February 2000, under the EU-India programme. While exploring possibilities of running a postgraduate course between European and Indian institutions, Joe, a young lecturer from the University of Brighton and Ajith, a young systems manager, who also lectures, from Delhi
University South campus discovered over an informal chat that they were both teaching computer networking in their respective universities.

I met Jon, we came to know our common interest. Because he is into (computer) networking and he is responsible for the Brighton network and his is teaching as well. And I am doing a little bit of work like that here. So we found the common interest in the learning technologies. (Ajith - Interview July 2000)

The Indian Coordinator, Dr Arun, recognised the potential of Ajith and Joe collaborating and suggested that the two academics explore the possibilities of working together to extend their interest. As Ajith elaborates:

Dr Arun, honorary Director of Institute of Information communication centre, asked me would you like to have some sort of, I mean collaboration with this kind of work (EU-India programme) and he introduced me to Joe. I learnt that this (EU-India programme) is quite an interesting work. It is collaboration in cross-cultural networks. They have appointed me as a network fellow of this project (EU-India Cross-Cultural Innovation Network programme) so I have started working on this (on the EU-India programme). (Ajith - Interview July 2000)

Joe and Ajith decided to work together on a project, to produce a web-based networking resource to be generated by the students of both institutions. This was decided in March 2000.
5.2.2 Who was involved

Institutions involved in this collaboration

The "Computer Science Project" was to involve postgraduate students from the University of Brighton and the University of Delhi South Campus. While many of the M.Sc Students from the University of Brighton come from a non-technical or Science background, Ajith from University of Delhi points out that,

(We) take only the science graduates. Only science graduates the students having physics at their graduation level. *(Ajith - Interview July 2000)*

He goes on to elaborate,

In networking and in communication if students understand the (underlying) law/(rule) and the distribution of current/(electricity) and the law/(rule) as to what should be joint and so on, then he can cope better with the networking field. *(Ajith - Interview July 2000)*
This difference in background knowledge was seen as a positive aspect as the students would be able to support and facilitate each other at various levels in the learning of the network technologies.

5.2.3 What was the goal?
The academics identified the goal of the Computer Science Project as pooling together the works of the students from both institutions and building a web-based resource.

We sort of planned to have and kind have got already a central web site which will contain resources created by students not necessarily created for the web site (Joe - Interview July 2000).

Resources gathered in this site will not be necessarily produced under the Computer Science Project. The material might come from other activities in the students' courses like projects and any experiments that they have carried out.

The ones they might have done as part of a project and then if it good then we'll stick it up on the site and make it available for everyone. Odd bits of technology or odd bits of case studies or whatever that might be interesting and they'll do that together (Joe - Interview July 2000).

Ajith felt that this project- "Computer Science"- would encourage students from India to interact with students in Brighton to share and obtain information.

They just contact through this service, through this project ("Computer Science Project") they directly contact the University of Brighton student they can share their ideas, they can share their views and they can ask for materials (that they will be interested in and also for the web site) (Ajith - Interview July 2000).

Both Academics "thought it would be a good idea to let (our) students help each other" (Joe - Interview July 2000).

Ajith and Joe presented a paper at a conference in Manchester soon after their meeting in India. In their paper they argue that the students need to be prepared to interact with various people from different cultures in the international scene. It will also give them the skills needed in cross-cultural communication in an authentic environment.

On graduation the students will often be required to interact with others from different cultural backgrounds, whether they are well prepared to do so or not (Singh, S and Dron, J 2000).

This being the reality Joe and Ajith argue that,

In the hope of building strong international working relationships between people and organizations of different cultures, it is important that students be prepared for the emerging future where cross-cultural communication skills will be of great importance. One way of developing these abilities is to present students with authentic opportunities to work with people of specialized skills in a subject domain (Singh, S. and Dron, J. 2000).
Ajith also states that the leaning and teaching in India need to be introduced with new ideas and methods. The Indian teaching and learning are still classroom based where the teacher student dynamics are of concern.

Educational system of European countries has been able to keep up with the fast developing technology. While they have introduce the new culture of web based teaching, India's teaching has been and still is classroom based, teacher and the student... The concept -web based learning methodology- is a new learning technique for Indian students. (Ajith- Interview July 2000)

Introduction of the web based learning and teaching are not seen as a replacement of classroom teaching but to give the students an opportunity to extend and consolidate what they have learnt.

By introducing this we don't mean that we are replacing the classroom teaching... just to give the back up because no teacher can repeat what he has done in the earlier classes so just to give them a stronger background on the relevant subject. Now I am arranging weekly seminars on current IT topics. We call the industry people to deliver the talk. We talk to specialists from IADs from institute of science and Bangalore IAC. We are currently doing these kinds of activities. (Ajith- Interview July 2000)

While Ajith is investigating introduction of new teaching and learning methods, Joe is hoping that the project would expose his students to skills, knowledge and perspectives that would be different from what they already possess.

...there is that the students in India have a very good range of skills which my students possibly don't have. (Joe - Interview July 2000)

He goes on to explain that the students in Brighton are able to communicate and mediate between computer experts and users while at the Indian end the students are more on the technical side of computing.

There is a range of things that my students might do slightly better, they are used to the idea of talking about things I guess. And the emphasis here is very much on communications rather than non (communication) and the ability to act as a go-between between real people and computer people. Whereas at the Indian end... it is a matter of emphasis really they are more on the computer people side so that we thought might be vaguely useful. (Joe - Interview July 2000)

This scenario is seen as very useful for the students from both Universities as it would broaden their horizons.

And simply the fact that they will have different perspectives on life and sharing the perspective might actually be quite valuable. It would be nice the Indian students from their point of view could help because they are very much in an international environment in a way perhaps our students are slightly more parochial. (Joe - Interview July 2000)

This project is seen as giving an opportunity for students to collaborate across cultures as well as to use the information and communication technologies in the process.

5.2.4 Participants' interests
The Institute of Informatics and Communication is relatively new and Ajith was chosen to set up and run the department of Informatics. Engaging in a project like EU-India presents the opportunity
for Ajith to explore his interest in learning technologies and try out new ideas in the new Informatics department. Ajith was also interested in exploring collaborative learning, which is a relatively new area in India.

"...this is part of the EU-India project (EU-India Cross-Cultural Innovation Network) and they visited our institute and I was not very much aware of this project ... when they visited us and we had some meetings and discussions during those discussions I was really thrilled and I came to know that there are opportunities and possibilities to work on collaborative learning. (Ajith- Interview Sep 2000)"

Ajith's interest lie around the area of optical communications and optical networking. Along with this interest, he had also become interested in the networking of the institute and learning technologies.

"I am working on learning technologies for the past couple of years. I too have some inclination by my doctoral work. I took my doctoral work in optical communications. So I am just trying to explore the possibilities ... things I work in optical networking but I find that this networking of the institution and the learning technologies are more promising. And I will find interest so I have been in touch with so many people who are really working in this field. (Ajith- Interview March 2001)"

Collaborating with Joe, Ajith saw it as an opportunity to extend his students' classroom learning culture to web based learning. As he explains:

"We (in Delhi University) have the classroom teaching and other methodological approaches like seminar and workshop. Now as part of the project we are introducing this concept of web based learning methodology is a new learning technique for Indian students. With the help of Joe we have tied up on a topic like networking in computing and communication, we (Ajith and Joe) are going to upload our lectures and tutorials and other resources on to the internet (Ajith- Interview July 2000)"

Ajith also wanted to learn about self-learning systems, which Joe had knowledge about.

"This visit of Joe is really fruitful. I am really interested in the self-learning module (technological self-learning systems). So we had a meeting a couple of days ago and discussed this (Ajith- Interview July 2000)."

Ajith who has a good working knowledge of Open Source was using it to design educational learning environments. To design the self learning system, Ajith wanted to explore the possibilities of using Open Source as it was seen as an inexpensive and flexible way of achieving the desired learning system. Joe was also interested in learning about using Open Source for designing learning environments and was interested in learning about Open Source from Ajith through this collaboration.

"Along with designing and implementing the Self-learning system, Ajith and Joe were also interested in trying out the technology for assessment and evaluation of learning in this self-learning environment.

"Joe: With a self-learning course there is the danger that they might fall behind or they might skip some bits just not be able to motivate themselves."
Ajith: So we should introduce evaluation methods. Some kind of an evaluation is required.

Joe: Yes, or assessments you mean by those you have distinct means for that evaluations in that What did they think of the course? And, assessments on how they learnt from it?

Ajith: yes true

Joe: Normally I would suggest they way to help them is in way is to give communication and to allow them ways of being able to ask questions. For example when they have problems. That could be done electronically that makes life lot easier. Typically for instance I'd use a news group and I try to use my COFIND system. (Observation March 2001)

Joe's interest lies in the area of network technologies and learning technologies. His Ph.D. work has been on developing a collaborative bookmarking and self-organising system, which he calls the COFIND system. The EU-India programme was seen as presenting an opportunity for him to apply his knowledge of learning technologies in a cross-cultural context and to share his knowledge with others.

For Joe, trying out the self-organising system, which he had developed as part of his Ph.D was one of his interests in participating in this project.

And also it is a good opportunity to throw in my COFIND system and any chance of experimenting is always good for me. So they will have a collaborative resource database. (Joe- Interview Nov 2000)

He also feels that it would give him opportunities to extend his research in an environment where use of the system might be different.

Oh yeah, any bits of research helpful. Any ways in which my system could be used to see what happens when a bunch of people get together you get an emergent patterns of what are the ways in which they behave. I think the difference is that the way in which things happen there and the ways in which things happen here might be interesting. (Joe- Interview March 2001)

Visiting places and meeting new people, which would enable networks to be built, is also seen as a factor that has motivated these academics to participate in this collaborative activity. During one of the discussions that took place in Brighton in September 2000, when Ajith was visiting, Joe suggested that:

We'll get a paper out of this.. another trip, this could be next year. We could present a paper in a much nicer place than Manchester. (Observation Sept 2000)

These are the factors, which have drawn the Academics into collaborating on a project. The academics also have identified how it will be beneficial to the students from both Universities.

5.2.5 The phases in the Computer Science Project
In this section I will give a brief summary of the phases envisaged for the "Computer Science Project" by the Academics and the activity that took place.
5.2.5.1 Phases: First six months... (March 2000 - Sep 2000)
These phases of development are expressed in one of the papers written by Joe and Ajith for a conference held in Manchester United Kingdom:

The first phase of development involves the mounting of web-based tutorials and documents produced by the students. The second phase will centre on the development of a knowledge-base generated by the interaction of the students within an asynchronous forum. Running alongside these phases will be a collaborative bookmarking system, a database in which the students will post URLs of web-based resources that they find useful in their studies. (Singh, S. and Dron, J. 2000)

As planned the first phase was set in motion soon after Joe returned from meeting Ajith in India in March 2000. Joe created a web site where the tutorial and documents were to be posted. The collaborative creation of the web site was started with Joe assembling a prototype of the site and asking Ajith for comments and suggestions. The response was positive and that was the last communication for six months until Ajith’s visit to Brighton in September 2000.

5.2.5.2 Phases: Second six months.... (Oct 2000 - March 2001)
The visit rekindled the project and further plans were drawn to revisit the design of the web site and introduce it to the students. During this face-to-face meeting, the academics refined the activity and what was expected from both of them in this project.

We are very much clear in our ideas and we have identified with this visit I am clearer about what to do next. And after going back to India I have launch a web site This web site which we have discussed already and it will be evaluated within a week or so by Joe and it will be finalized. So then we'll have the parallel approach like same site will be hosted form both places. (Ajith- Interview Sept 2000)

A central web site was set up along with a discussion group/list.

We sort of planned to have and kind have got already a central web site which will contain resources created by students not necessarily created for the web site.... We have set up although not used yet a sort of a mailing list, kind of a thing. Using talkitover web site. (Joe - Interview Nov 2000)

The next stage of this project was also discussed and it was envisaged to exchange assignments from both institutes, to evaluate the students' on their understanding of the subject area.

we are focusing on the networking which is totally technical course and we have agreed to exchange our assignment for evaluations. I think next month he (Joe) will be sending me the assignments so the same assignment I'll give it to the students of Delhi and I'll give it back to him (Joe) to evaluate them..... so it will give us an opportunity to evaluate the students and what is the difference (between our students understanding of the subject) (Ajith- Interview Sept 2000)

5.2.5.3 Phases: Third six months.... (April 2001 - September 2001)
Following the meeting in September in Brighton, there was little communication until another six months later in March 2001 when Joe visited Delhi. So what did they discuss when they arrived in Delhi?

Well, we quietly ignored all that had happened so far. Well we were going to set up a web site and the students were going to work together on it. And we didn't. (Joe - Interview March 2001)
Due to difference in term times and curricula between the students of Indian University and Brighton, incorporating the project into the students’ daily activity was not possible.

In an attempt to move the project forward quickly, Ajith and Joe decided to apply for funding so that they could employ a technically skilled person to support their collaborative activity over the Internet enabling them to concentrate on the activity itself.

Ajith had got this idea that we would make a bid to the British council, as a way of making it easier for us to collaborate in doing these things. Lot of what we were talking about was what we might be doing and ways in which it might happen without it failing as it had done in the previous year. (Joe - Interview March 2001)

According to the participants the project has progressed in a very slow manner from the planning and implementation of the central web site.

5.3 Interaction and communication

To plan, set up and carry out the "Computer Science Project" a number of face-to-face tools such as workshops and conferences were used. As for on-line tools, various asynchronized tools, such as the TeamRoom, mailing list and emails were considered. However only emails were used.

This section presents the face-to-face meetings (5.4.1) where the phases of the collaborative project were planned and discussed. Furthermore it also presents the communication technology (5.4.2) that was available for the participants in this collaboration and the use of these tools for the activity.

5.3.1 Formal and informal face-to-face meetings

"Formal meeting" is defined as a meeting organised by the co-ordination centre of the EU-India Innovation Network to inform, discuss and extend ideas. Any training or courses organized by the co-ordination centre are also considered as "formal meetings".

Workshops and conferences were organized by the EU-India Cross-Cultural Innovation Network to facilitate any activities that had started or to trigger new activities. Participants attended workshops and conferences from all the participating institutions of the EU-India Cross-Cultural Innovation Network along with local community groups and any interested party.

5.3.1.1 Brighton England in September 1999- Formal meeting

This was the first of a series of workshops and conferences organized by the EU-India Cross-Cultural Innovation Network. Joe participated in this event and presented his Ph.D. work CO-FIND system. In one of the workshop sessions a group was formed according to interests and asked to
suggest projects that they would like to do. Joe suggested learning technologies and distance learning. A number of people from Indian institutes were very much interested in this and wanted Joe to go to India and run a short course on learning technologies. The Indian coordinator wanted Joe to address the students at the Department of Informatics, Information and Communication at the Delhi University South campus when he visited India.

Following this conference the main coordination centre arranged for Joe to visit Punjab Agriculture University and University of South Campus University of Delhi. During his visit he was expected to deliver a short course on Networking Technologies.

5.3.1.2 Delhi, India in February 2000 - Formal meeting
Joe was recruited by the EU-India Cross-Cultural Innovation Network to run a short course on Network Technologies at the Punjab Agriculture University. After his visit to Punjab Joe visited Delhi University where he had meetings with the Indian coordinator of the EU-India Cross-Cultural Innovation Network Programme. He met the students doing their MSc at the department of Informatics, Institute of Information and Communication and presented the Self-Organising Bookmarking System to the students.

5.3.1.3 Delhi, India in February 2000 - Informal meeting
Joe met Ajith after presenting his Ph.D. work to the MSc students. Ajith attended the presentation and was interested in the system, and was keen to try it out with his students. Following this, during an informal chat, Ajith and Joe realized that they were both teaching Network technologies in their respective universities.

5.3.1.4 Brighton, England in September 2000 – Informal meeting
During a visit to England to present a paper at Manchester, Ajith met up with Joe at the University of Brighton to plan the next stage of the activity. They identified the reasons for their slow progress and suggested that they were in need of a mediator/coordinator, who could keep them both focussed on the project. I was informally appointed as the mediator/coordinator. However, as the participants did not respond to the online communication that I had initiated following this meeting to stimulate the activity, my role as a mediator/coordinator did not have any impact on the progress of the project. During this visit the participants were also trying to apply for funding so that they could employ a technically skilled person to set up and run the system which they were planning to use with their students.
5.3.1.5 Delhi, India in March 2001 - Informal meeting
During Joe's visit to India in March, he and Ajith discussed the practicality behind the self-learning systems. Ajith was interested to know how the evaluation and monitoring could be done on such a system. Since Joe had experience in computer-supported learning and teaching, he was able to explain the advantages and limitation of a self-learning systems. They also discussed ways in which the stagnant "Computer Science" project could be rejuvenated. They envisaged that the self-learning system would be part of the Computer Science Project. The use of groupware for learning and teaching were also discussed.

Joe and Ajith also used this meeting to prepare a proposal to obtain funding from other funding bodies and agencies. An outline of a proposal for funding was prepared by Ajith and Joe to be submitted to the British Council.

5.3.2 On-line communication
The Computer Science Project participants had access to online tools such as emails, TeamRoom and the mailing list. The emails and the TeamRooms were seen as forum where the participants could have private discussion with regards to the project while the mailing list was seen to provide a public domain where the participants could not post their ideas and research to an audience beyond the EU-India programme.

5.3.2.1 Mailing List
The mailing list was set up in September 1999 and the participants were informed about it in the workshop in September. Information and instructions on how to join the mailing list were given to all participants. During this time, Ajith had not joined the EU-India programme.

Ajith joined the programme in March 2000. Following this I sent out information of the mailing list to all participants and Ajith was also included. But Ajith did not join this public mailing list.

Use of the list
Since the EU-India Cross-Cultural Innovation Network's first workshop and conference was held at the University of Brighton, Joe was involved in the activities. As a result he knew about the mailing list that had been set up for the programme and joined it.

5.3.2.2 TeamRoom
A project like the "Computer Science Project" at a distance depends heavily on the frequency and flexibility of communication. The TeamRoom was set up to provide such a facility.
TeamRoom was set up using Lotus Dominos. The reason for setting up a TeamRoom for the project was that the participants might need a private forum where they can discuss their ideas. It has facilities to conduct private as well as public discussions. These TeamRooms give the participants the option of uploading their work plans, research reports, joint papers and discussing them before publishing them or taking them any further. Moreover documents can be sent to other participants in the discussion groups for reviews or comments. An archive or library can be created so the participants can retrieve an item any time in the future.

Since this discussion forum is asynchronous the factor of time difference between countries will not affect the discussion. It also provides an opportunity for the participants to take time to reflect on the issues that are being discussed before they can respond. They will not be pressured by the time or cost factor. Unlike email discussions, the discussion group gives the participants to follow the thread of a discussion without difficulty. Furthermore the "search by author" or "search by title" facility will enable any participant to go back to issues that have been discussed in the past. The high security will give the users more confidence to participate in discussions and communication.

**Use of the TeamRoom**

Once the TeamRoom was set up, Joe and Ajith were informed of the facility. They were informed of their common user name and password. They were also informed that I, as researcher, would be logging in to observe the interaction. The participants did not use the TeamRoom facility. After six months of setting up the TeamRoom, I wanted to know why the TeamRoom was not used and how it could be improved. Through informal discussions, I came to understand that Joe preferred the use of emails as it arrives on his desktop and he does have to go looking for communication elsewhere. Ajith wanted to know whether I could set up the system to take anyone that they as participants would like to bring into the discussion. I agreed to it and asked him to send me the details of people to be included, but did not receive any such details nor was the TeamRoom accessed. The TeamRoom was not used until a year later when I posted a draft of the joint paper that the participants and I were writing for a conference. Joe and I had written the bulk of the paper and wanted Ajith to comment on it. In an attempt to make this collaborative writing process easier, I had emailed a copy of the paper and also posted it in the TeamRoom. Neither of the attempts were successful in getting Ajith to comment on the paper. In the end Joe and I agreed to send the paper to the conference without any input from Ajith.
5.3.2.3 Email
Apart from face-to-face communication, on which the participants relied heavily, emails have been the other main mode of communication. Due not only to the unstable mailing system in India but also the difference in preference of communication mode, use of emails was limited. In the University of Brighton and at Delhi University academics have access to on-line technology as well as telephones for communicating with students and colleagues. Even though both of these facilities are available to the academics there is a distinct preference to one over the other. The academic in India prefers to use the telephone to communicate and interact with his students and colleagues because he feels that emails are a very formal means of communication. Since electronic mail is a written medium there is also a feeling by Ajith of it being legally binding. Emails are seen as an extension of the paper based letter writing. As a result emails are used as records of formal arrangements of meeting or dissemination of information. For any informal conversations and discussions the preferred mode of communication is the telephone. In contrast to the Indian perception, the Brighton academic uses the electronic mail as the main mode of communication between him and his students and colleagues. Telephone is used only when email communication is not an efficient option. This differing preference on communication modes affected the way in which collaboration took place.

5.4 Some of the issues that affected this collaboration
The work that the academics carry out is influenced by the culture of the institution in which they work and the people with whom they interact. The approach to education and the culture of the institutes that these participants come from, although similar on the surface, are different at various levels. These differences seem to have an impact on how the academics tried to collaborate. In a working context like the University of Delhi and Brighton academics interact and organize their work around their students. They not only influence the students' thinking but also are influenced by the students needs, learning styles and cultures. Students expect to learn through lectures, interactions and activities. Each academic institute has a curriculum and a teaching and learning method to deliver these needs.

This section presents some of the issues, such as curricula, different teaching and learning culture and work commitments that impacted upon the collaboration between Ajith and Joe

5.4.1 Curricula
When two academic institutes from two different continents come together to collaborate learning methods and curricula may vary to some degree. At the beginning of the project it was assumed that
a major part of the MSc curriculum was similar two both groups of students in Delhi and Brighton, although the Delhi term times were different.

We have 80% the same curriculum. Except we are two months ahead curriculum wise. (Joe - Interview July 2000)

In their joint paper, Joe points out that although the subject matter was largely similar between the two groups of students, the knowledge level was different.

... it was clear that the closest match between groups of students that could be achieved was of an MSc course in networking and communications at Delhi and an MSc in information systems at Brighton, which includes networking and communications as a relatively minor subset of the whole degree. Despite large overlaps in subject matter, this results in differences of knowledge level between the students, especially in the early phases of the courses, when the Brighton students are learning basics, which the Delhi students already know. (Singh, S. and Dron, J. 2000)

Sharing of assignments between the groups of students was one of the goals and means for student collaboration. As time went by Joe realized that the "Networking" module at the University of Brighton was inextricably linked with other modules of the course, which prevented the sharing of assignments.

Because the networking modules at Brighton need to integrate with other modules, there are dependencies between them, which cannot be mirrored in Delhi. For example, a parochial case study (based on a British boat hire company) prevents the sharing of assignments. (Singh, S. and Dron, J. 2000)

Although there were some similarities between the networking modules that were being taught in both universities, there was also the issue of trying to find time that would enable both sets of students to work together as planned. The way in which the course was set up was also different as in the University of Brighton there is a modular system that is linked with other modules which was not the case at Delhi University. Hence it was not possible to set up the collaboration between the students. So it was decided that the students would work separately to create a web based resource on the subject of networking.

From one the discussions that took place between the two Academics, it was clear to see that not only the curriculum was different but also the term and vacation time of the two universities.

Ajith: What sort of time do your students do their summer project?
Joseph: they do their summer project in July, I think July and a bit of September, so it works out to be something like ten weeks
Ajith: they do in June/July
Joseph: so close isn't it? Unfortunately of June is when they are going to be doing their exam the big exams so I guess they are not going to be terribly keen to contribute apart from help from revision.. revision kind of questions that they are quite keen to volunteer. (Discussion that took place in Sept 2000)
Difference in term and vacation times made it difficult to set up collaboration as while one group of students were busy with their exams the others were away during vacation. This had restricted Ajith and Joe to a very small space of time when they could get the students to collaborate. Consequently, Ajith and Joe had to decide to set up a project where the students worked on building the web-based resources in the area of networking.

5.4.2 Teaching and learning culture

The teaching and learning culture in the institutions seems also to be an issue in this project. Ajith has already mentioned that the reason for setting up the project is to introduce new ideas into the existing approaches to teaching and learning at the Delhi University. He sees the current system in the Indian University as still being quite traditional.

...every country has its own criteria of learning, India specifically has a conventional learning approach where it is just sticking to the classroom, having just a blackboard and a piece of chalk. So the teacher comes delivers the lecture, whatever he wants to tell he writes onto the black board. He may (my italics) have some discussion with the students he may not. It is not mandatory for the teacher. It is within the time frame just a fifty minutes lecture and what ever he delivers in those minutes the students are take notes from the blackboard. So it is very difficult. (Ajith- Interview Sept 2000)

Moreover Ajith points out that the teaching and learning are still classroom based with the lecturer delivering the “Knowledge” to the students. In a paper written by Ajith and Joe, they explain that the pedagogical culture of learning in India is teacher centred:

Pedagogical value in India is more towards acquiring knowledge as information disseminated by the elders in general, and the teacher in particular. Mutual (student to student) interaction is less usual, confined to exchange of notes and issues relating to interaction with the management of the teaching programme. (Singh, S. and Dron, J. 2000)

Since “students in India place a high value on the amount of effort one puts in acquiring knowledge through textbooks,” (Singh, S. and Dron, J. 2000) they need reinforcements from their teacher as to the “authenticity” and “credibility” of web based resources.

Indian students are still in a dilemma whether that the information uploaded on the web site is still relevant and authenticated, so they keep coming and asking whether it (the information) is right or wrong. This is the relevant position and if you want to follow this, you follow. There is now checks to say that it is authenticated although there is no signature available on the web site only the text. Students are a bit apprehensive but slowly they are getting into it. (Ajith- Interview July 2000)

He also goes on to explain that as the students have a heavy work schedule, they prefer to stick to the lecture notes rather than go out and explore or investigate the ideas discussed during the lecture.

... here the culture is that the student is very busy with classroom and laboratory assignments and all. If you compare the culture of the students here and the culture of the students in western countries, you find that the students there (in western countries) have a weekend kind of concept- no work nothing, it is all fun. But here (in India) in the weekends the students are fully loaded with work. So
they prefer to listen to the lecturers/teachers notes and stick to that- this is the real stuff so I should go for it. (*Ajith- Interview July 2000*)

A similar point was made in one of the papers co-written by Ajith with Joe.

Students are always busy in finishing their assignments rather than looking for other resources. (*Singh, S. and Dron, J. 2000*)

In the paper the academics go on to explain that the Indian students feel the pressure to perform well because of the highly competitive nature of the academic world. As a result learning is orientated closely with performance at examination.

With the increasing academic competition and pressure on the students' to perform well, the education system today encourages earning grades. This is why, students concentrate on whatever is taught is simply absorbed by them, memorized and then reproduced at the time of examination. (*Singh, S. and Dron, J. 2000*)

Not only the curricula, learning and teaching culture and the culture of the institute that has an influence over the project activity but also the participating academics personal interest and motivation.

5.4.3 Work commitments

In this section I present the participants' work commitments in their respective working contexts. Here, Ajith and Joe work in Universities, hence their work commitments have been presented as teaching and learning, carrying out research and fulfilling administrative responsibilities.

5.4.3.1 Teaching and Learning

Ajith joined the Institute when it was set up two years ago. During the time of setting up the Institute, the director of the south campus came across Ajith who was preparing to leave the country to take up employment overseas. The director persuaded Ajith to apply for the job of Systems Manager. He was asked to set up and run the Department of Informatics, Information and Communication while setting up the computer network system for the institute.

The academic in Delhi University is involved in various activities ranging from setting up and maintaining the Departments' systems in the University and teaching postgraduate students Network technologies.

My activity is this actually my main responsibility is to provide all the available technology in terms of literature in terms of practical experience to the students. We have the five laboratories here we have the main computer application development laboratories the networking laboratories we have the computer architecture laboratory we have the communication laboratory and we have multimedia laboratory five laboratory we are working on. (*Ajith -Interview July 2000*)
Along with this Ajith also was given the responsibility to co-ordinate the network of the University of Delhi which has eighty colleges, sites situated north and south of the City of Delhi. Ajith also teaches postgraduate students as the Institute runs only postgraduate courses.

The teaching of the postgraduate students is shared among other academics in the institute and the campus, where Ajith co-ordinates the delivery of the course.

First of all I conduct a meeting with the network faculty and we decide what to teach so I take one module another takes second module. We distribute the workload and all the students have access to contact everybody of network faculty. (Ajith- Interview July 2000)

Teaching is followed by weekly seminars where experts from Industry are invited to speak.

I am arranging weekly seminars on IT topics current IT topics we call the industry people to deliver the talk. We talk specialists like from IADs from Institute of science Bagolore IAC these kinds of activities we are currently doing. (Ajith- Interview July 2000)

Ajith also has to conduct examinations and mark papers, including the marking of dissertations.

Joe, whilst having module leadership responsibilities, which requires him to collaborate with his colleagues in his field to prepare and run courses in a given academic year, was also committed to his Ph.D. at the time of the project.

For his lectures, Joe has the lecture notes and tutorials on the web that he has set up for his module. When he gives a lecture he brings up the lecture notes from the web site and uses them as slides for his lectures.

I avoid giving a lecture specifically. Generally I have web based notes that I use to help structure what I am doing (lecturing). Because they are web based they don't necessarily follow a linear order and it is sort of mixed in with whatever seems appropriate to the subject matter at that time. (Joe - Interview Nov 2000)

Joe also teaches on the MA in Communication Studies, which is very much about training, hands on learning for students.

I find that my MA Coms for example is content free. There is no content at all it is a little bit of training. Tricky thing with that one is that not planning anything but trying to respond to what is going on and being alert to the communication type of .... (interaction) (Joe- Interview Nov 2000)

Joe has to write examinations and mark them. Furthermore he has to mark dissertations of students, which are programmes developed by the students supported by written documents.

5.4.3.2 Research

Since Ajith is a systems manager and carrying out research along with his teaching and administrative responsibilities can be difficult.
Actually if you carry out the research on your own it is very difficult. You need lot of motivation. You need lot of support from the organization that you don't have that much from the universities. *(Ajith – Interview March 2001)*

An international programme, like the EU-India Cross-Cultural Innovation Network gives the academics the required platform to carrying out research.

When you are working in a project nobody can say that you are wasting time or you are not doing the job properly kind of thing, so actually a flag is required in India, to do research. *(Ajith-Interview March 2001)*

According to Ajith the University does not officially give time within his daily teaching time to carry out research. Ajith has to find time outside his schedule to work on research.

No, University doesn't allow me frankly speaking, doesn't allow me to do this kind of work in the routine time - 9 am to 6pm but after 6pm I do this work......it is my personal research work, research area so I have to spend more time to my regular time schedule. *(Ajith-Interview March 2001)*

Joe has been involved in various research projects such as on the "Learning Technologies" project? within the university. He has also been involved in teaching and research activity with other organizations.

I have been involved in Teaching Company Scheme. That is quite a formal process. It has collaboration but it has an internal structure. The Janet project in which we were part of, we were very much an autonomous part. *(Joe- Interview March 2001)*

In the case of Joe, the university expects him to carry out research. The University provides support to academics to carry out research. Academics have the freedom to identify and carry out any research activity along with their teaching commitments. Currently Joe is carrying out research on the use of groupware in teaching and learning.

### 5.4.3.3 Administrative responsibilities

Along with the regular commitment of lecturing to the computing postgraduates, Ajith also has to deal with a lot of administrative tasks.

Apart from teaching I have to do so many administrative tasks you know ... I have to co-ordinate the entire students (in the institute), co-ordination the faculty (members on lectures) and co-ordinate different lectures and expert from the industry, ....I have to co-ordinate little bit of the placement for the students and for that I have to invest time and communicate with industry. So they used to come and for the campus placement... Sometimes it is forty. It doesn't help. *(Ajith-Interview March 2001)*

Whilst Ajith has to deal with placements for thirty to forty students, not only from his class but also from his whole department, as a Systems Manager he is also in charge of running the computer suite with thirty computers and two servers. In running the computer suite Ajith has devised an innovative approach to running his department. Computing students from his department are employed as trainees to maintain the servers and the computer suite.
Now, it is the students' responsibility to open the (computer) lab and to close down the lab. So we have started, we have a team of students, selected on the basis of finance or enthusiasm. After the team is selected we distribute the load, like two students are responsible for the system management, two for the network management and two for the laboratory management. So all of them are busy and they are solely responsible for any mistake. *(Ajith - Interview March 2001)*

This innovative system seems to be quite successful as very few faults have been reported.

I have not received any complaints so far from the systems. We have not given any annual maintenance contract to any machine at all. One machine belongs to one student and they feel that the machine is only for him so he keeps it well. *(Ajith – Interview March 2001)*

An employment opportunity like this gives the students an opportunity to try out their skills in an authentic environment. This has a number of benefits, exposing students to authentic situations and giving them a sense of ownership and responsibility, which they take very seriously.

Though the system was running smoothly at the time of the interview since then there has been breakdowns in the system taking a lot of Ajith's time. Heavy responsibility of this kind can take up time and energy.

5.4.4 Role

Rewards, such as being identified as a research fellow can be motivating to join a project and working on it. This could be seen as Ajith mentioned in the interview that he has been appointed as a research fellow in the EU-India Cross-Cultural Innovation Network programme.

So in the last, ... February when they visited India they appointed me as a network fellow of this project (EU-India Cross-Cultural Innovation Network) *(Ajith - Interview Sept 2000)*

Ajith appreciated this recognition, although in the long run it had no impact on the progress of the study. As he points out

Here in University Administration they don't recognize a network fellow. They recognize a project coordinator. Normally in Indian convention a project is handled by a project investigator, principle investigator like that. So when you are working as a network fellow they won't listen to you. Network fellow is seen as a student. They don't have much say in the activity. You need to have some authority so that the administration can listen to you. *(Ajith - Phone interview Sept 2001)*

This shows that according to his institute he needs to have a recognised high position to get the support he needs to work in it. Hence, in the year 2001 Ajith was identified by the EU-India project as the coordinator for the Delhi University activity, taking up the mantle from the Director of Delhi University, South Campus. As a result he was able to make progress with the systems that were needed to run the Computer Science Project.

Once you have been appointed to an administrative level, you automatically get powers. To make the decision to have a person (to support) or not to have a person entirely depends on your own approach. As a network fellow I have had restriction on me. My way of working may be differ from the project coordinators. I am much comfortable now that I am coordinating the project. *(Ajith - Phone interview Sept 2001)*
This need to give Ajith more powers by giving him a high position so that he could deploy more resources towards the Compeer Science Project slowed the project initially. However once Ajith’s role as the coordinator for Delhi University had been assigned by the EU-India programme, the pace of the Computer Science Project gained momentum.

5.5 Success of the collaboration
This section presents the identified elements across the cases to reflect the success and failure of the collaboration in the project. Success of the collaboration on the project is measured using these elements.

<table>
<thead>
<tr>
<th>Measure of Success</th>
<th>Computer Science Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project goal</td>
<td>No</td>
</tr>
<tr>
<td>Personal goals achieved</td>
<td>Yes</td>
</tr>
<tr>
<td>Maintain the links</td>
<td>Yes</td>
</tr>
<tr>
<td>Extending the current project</td>
<td>Yes</td>
</tr>
<tr>
<td>Product (Multimedia or other)</td>
<td>Yes</td>
</tr>
<tr>
<td>Publications</td>
<td>Yes</td>
</tr>
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As seen in the above table, in this Computer Science Project, due to the difference in term times and curricula, the original idea of creating a web based on-line resource on network technologies through collaboration of Indian and British students was not achieved. The original project goal was not fulfilled. Nevertheless, an on-line resource on networking technologies is being built by the Indian students. Ajith and Joe are still planning to set up collaborations between the students in India and England.

Both participants achieved their goals and they still maintain their links by setting up new projects. Ajith gained knowledge of incorporating learning technologies into the learning culture in India while Daniel was able to observe the use of his self-organising system in a different culture. They are still in the process of learning to use open source to design learning environments.

The participants have sought funding from other funding bodies to extend the current project since the EU-India programme has come to the end of its three-year period.
The Computer Science Project has enabled Ajith to design learning technology environment for his students at the institution. Ajith has developed a self-learning system for his students in the Networking course which is now being actively used by his students in India.

Participating in the Computer Science Project provided the opportunity for Ajith and Joe to write and present academic papers at conferences. They have also published in reviewed journals on the collaborative experiences in this cross-cultural context.

5.6 Summary
The Computer Science Project was identified on the basis of Joe and Ajith's interest and their current activities that they had been involved in their respective universities. The project was seen by the participants as giving students and academics alike opportunity to collaborate in a cross-cultural environment to learn and deal with differing perspectives on learning, communication and collaboration.

The Computer Science Project was identified and set up after a face-to-face meeting. Any significant progress made on the project was achieved during face-to-face meetings when either Jon or Ajith was visiting Delhi or Brighton respectively.

A number of factors had influenced the collaboration in this cross-cultural environment. Although academics were collaborating on what had interested them, they were also dealing with students whose learning culture, curricula and perception of education in each university were different in spite of the surface similarities. It was not just the students’ way of thinking that had an influence on the collaborative process but also the work commitments of the academics and the institutional culture. The progress of the project was also affected by varying communication preferences shown by the academics.
CHAPTER 6. CASE STUDY(3) “BANKURA PROJECT (DOKRA PROJECT)”

6.1 Introduction
Another project that emerged as the EU-India programme developed was the Bankura Project. The project is a collaborative activity between Daniel and Raja, the Director of NISTADS, to record the change triggered by technological intervention among the brass artisans in the Bankura region of West Bengal. This collaborative project comes under the dimension of Knowledge and Innovation in the EU-India programme.

This chapter presents a narrative account of the project. Section 6.2 presents how the collaboration was identified, the participants, goals and the phases of the activity. Section 6.2.1 presents the activity at NISTADS and section 6.2.2 presents the collaboration between Raja and Daniel. Section 6.2.3 presents the phases of the collaborative activity. Interaction and communication strategies used to support the collaborative activity are presented in section 6.3. Sub section 6.3.1 addresses the face-to-face informal and formal meetings while section 6.3.2 deals with the online communication. Issues that have affected the collaborative activity are presented in section 6.4. Section 6.5 presents the elements in this project as a measure of success while section 6.6 presents the summary.

6.2 The Project
While Kalyani, the researcher from NISTADS was proposing to join the Dairy Project, Daniel, from UWCN, had come across another of the projects that NISTADS has been involved in for the last ten years. Hence, Daniel moved to collaborate on the Bankura Project with Raja. The participants in this project wanted to record the change brought about through technological intervention, among the brass workers in the Bankura region, through multimedia knowledge archiving. The process of identifying collaboration between Daniel and Raja and the progress of the activity can be represented in a time line as follows:
The Bankura Project is an on-going activity for NISTADS. The artifacts created by metal artisans are referred to as "Dokra". Daniel in one of his papers explains:

The name Dhokra or Dokra was formerly used to indicate a group of nomadic craftsmen, scattered over Bengal, Orissa and Madhya Pradesh in India, and is now generically applied to a variety of beautifully shaped and decorated brassware products created by the cire perdue or lost wax process. *(Smith, D 2001)*

These artisans follow the traditional way of casting using bee’s wax.

The tradition of lost-wax casting is an ancient one in India, going back to the Indus valley civilization. Today it is carried on in the manufacture of small pieces by tribal groups (such as the Bankura artisans) or in some cases by Hindu metalworkers for tribal clients. *(Smith, D. 2001)*

These artisans have settled down in the Bankura region. Nevertheless they still create brass figures and practicing traditional methods of brass casting.

The following sections discuss how the Bankura Project which has been NISTADS’s project for years (6.2.1) had been the focus for the collaboration between Raja and Daniel (6.2.2).

6.2.1 NISTADS and the Bankura Project
The National Institute of Science, Technology And Development Studies (NISTADS), in India had been involved in Bankura Project for quite a few years and had tried to help the languishing artwork
of the brass artisan through technological intervention. This intervention had not made the expected change in the community of the brass workers nor on the craftsmanship of the brass products.

In the context of NISTADS, what has happened with the moribund of NISTADS project, looking at Dokra project in the west Bengal and Bankura, - Here it is a case of technological intervention in the production of Brass Craft industry, which had happened some years ago, which has produced no growth rate change. (Daniel - Interview Feb 2001)

Hence it is pointed out that the artisans are not taking up the new technology provided and as a result there has not been much change in their status. Raja, Director of the institute had been trying to find out why the earlier technological intervention by the research institute had not been adopted by the artisans. He explains:

(Investigations) tells you that it is not merely that those people need your technology. I think one major mind set that we (the researchers and policy makers) have is that the rural people are poor so if we give them technology it will improve. This is not correct. (Raja - Interview March 2001)

He goes on to elaborate that the social aspect of the craft people has to be addressed and any change that is being introduced needs to take this into account. These groups have relied on each other throughout history for survival, therefore, any intervention to help them improve has to take into account the entire group and not individuals. This is elaborated by Raja:

For them (the artisans), in fact they are in a way scared of individual success because for them loyalty of their social group is more important than that of individual success and they don't trust you (the researcher or policy makers). We go there with good suggestions, but they don't know whether we'll come there tomorrow or not. ... They are scared of success because an individual success will uproot him from his family therefore unless it is a collective effort you won't succeed. (Raja - Interview March 2001)

To overcome this difficulty, Raja suggests that the artisans as a group need to be supported by introducing change in a step by step manner. This it is argued will give the artisans time to assimilate this change before taking the next step.

What has occurred to me from my monitoring of the work plus talking to various people, is this-what you need is to establish intermediary stages of equilibrium. What this means is that you give them an incremental thing. Wait for it settle down so that there is anew level of equilibrium established then take it from there, in other words you can only go step by step because they don't trust you and they are used to doing things in a certain manner. All of a sudden if you ask them to leave that, it doesn't sort of appeal to them, they are scared. (Raja - Interview March 2001)

Taking these social aspects into consideration, the research institute looked at the area where the technological intervention was needed and discovered that the furnaces, which were being used by the artisans, were inefficient. These artisans were still using the furnaces that they had used when they were a nomadic group. As Raja explains,

They were using open furnace when one-time theses people were nomadic they would go from one village to another do your brass work and move on. They would set up a furnace in the open. Now they are settled they continue using the open furnace. (Raja - Interview March 2001)
As a nomadic group they had relied on open furnaces to melt and fire their brass work and having settled down in the Bankura region they are still using the same furnaces to create their artifacts.

NISATDS, as an institute involved in action research, had proposed that it would support the artisans by helping them build an efficient furnace that would suit their settled life style. One of the artisan families was introduced with this new furnace a few years back and the Institution highlighted this as a successful solution to the problem faced by the artisans.

Some years ago, four or five years ago, we had helped one family. We built a pukka furnace for them it is a very simple thing, it is a small oven. With the open furnace, a lot of metal evaporates and they lose about 15-20% metal. The cost goes up. Their metal is their metal so it is their profit evaporating and they know it. (Raja - Interview March 2001)

Raja points out that the artisans know that this is their problem but they do not have the information to help them overcome this problem.

They know that they have a problem they know the solution but neither do they have the drive nor do they have access to any information, which will help them. (Raja - Interview March 2001)

NISTADS, is trying to provide this information as well as support the artisans to secure loans in order to buy efficient furnaces. Raja explains,

(I said) if we get a loan from the bank to get you new furnaces will you repay that loan. They said yes. We were helped by one person, whose name is Nathai, to set up this furnace (Raja - Interview March 2001).

This has enabled the brass workers to use these new furnaces and create their artifacts. As this is taking place, Raja also wanted to record the changes taking place in the artisans' practices as a response to the introduction of these new furnaces.

6.2.2 Collaboration on Bankura Project

Collaboration between Daniel and Raja was arrived at when they had met during one of Daniel's visits to India. Both participants recognised that they were interested in recording the changes brought about through the introduction of technology into the practices of the brass workers.

This section discusses how the collaboration between Daniel and Raja came about (6.2.2.1) and who is involved in the collaboration on the Bankura Project (6.2.2.2). Section 6.2.2.3 presents the participants' interests.

6.2.2.1 How did it come about?

Daniel and Raja arrived at this collaboration when they met up during an informal meeting during Daniel's visit to India in March 2000. Raja and Daniel recognized that they were both interested in identifying and resolving the problems faced by the Brass workers in Bankura.
(Met Daniel) in the EU-India Programme. He is already a part of it. I am part of the EU-India project … Daniel had come with the main coordinator and this chap Joe (from University of Brighton). (Raja - Interview March 2001)

The project had the potential for Daniel to pursue his interest of multimedia knowledge archiving to capture and represent the tacit knowledge of the Dokra craft. With the introduction of the technology, Daniel and Raja were aware that the practices of the artisans would change.

And that (technology change) is underway, this means the practices of the group over the period of time is likely to change radically whereas it has stayed in the past fifty years. (Daniel - Interview Feb 2001)

Therefore Daniel and Raja argued that, it is important to record the current state of the process involved in making the brass objects and the changes that would be brought about to the practice with the technological intervention.

It is now very important to secure an accurate archival record both of the Dokra industry and the way of life in which it is embedded. This ancient craft form is now about to enter a period of rapid change (Smith, D. 2001).

According to Daniel, there are very few studies that have addressed the Dokra industry and those that have addressed them are outdated and inaccurate. He also points out that the formal written sources seem to be incomplete so argues that the importance of having baseline records in order to redress this study needs to be carried out to archive the industry’s knowledge. Daniel explains:

Particularly as the formal written sources as this is were incomplete or in some respects ambiguous or inaccurate. So it is a matter of setting the formal records straight and archiving something that is going to change. (Daniel - Interview Feb 2001)

Daniel had felt that Raja, being the director of the research institute, was able to peruse this stagnant situation in the Bankura region and introduce the necessary technological changes because,

First of all Raja as the directors of NIDTAS has the authority and the budget to initiate this new technology change. (Daniel - Interview Feb 2001)

This was exactly what Raja was doing. He had taken the initiative to revive the Bankura Project and support the artisans and preserve the craftsmanship.

6.2.2.2 Who was involved?
As in the Floriculture Project, the Institutions involved in this collaboration were the University of Wales College Newport, National Institute for Science Technology and Development Studies and the University of Delhi, South Campus. Primary participants were Daniel from UWCN and Raja from NISTADS.
Daniel was planning to collaborate with the University of Delhi, as in the Floriculture Project to design the multimedia archive.

And I will hope to involve Delhi University in that activity. *(Daniel- Interview Feb 2001)*

As Daniel had explained in the Floriculture Project, it is important to carry out design whether it is information or structural design. It needs to be carried out within the culture from where the contents of the product have risen.

Through out the issue of design in this has been, we are talking about communication design information design, structural design, this is not something that you do outside of a culture. It is problematic enough communicating primarily in Hindi. The problem of mediation can be found in this. *(Daniel- Interview Feb 2001)*

Since the interviews with the craftspeople were conducted in Hindi Raja had to be the translator and mediator. This itself is seen as problematic, as the responses are being mediated rather than the actual response. Therefore, Daniel argues that it is important that when designing the multimedia archive, it needs to be designed by those who understand the language and the culture. Daniel explains the way in this could be addressed:
What I want to do is work with students of Delhi and want the product to be designed within that (culture). It would be quite wrong for me to do the design because culturally it is not appropriate. (Daniel - Interview Feb 2001)

So the participants decided to involve MSc students from Delhi University. However due to time, they have yet to train the students and start archiving the material that they have collected over time. Since, the Bankura Project has secured further funding from the UK Arts and Humanities Research Board, this collaboration with Delhi University on designing the multimedia archiving is shaping up to be a possible activity.

Two periods, each of about five days will be spent working at NISTADS, Delhi and also with graduate students at The University of Delhi Institute of Informatics and Communication to produce definitive translation write scripts and to create culturally appropriate graphic designs. (Smith, D. 2001)

6.2.2.3 What was the goal?
The goal of the collaboration was to carry out knowledge archiving of the practices of the brass craft people. Daniel elaborated this in one of the papers he had written on the Bankura Project:

The fundamental task is to capture and represent aspects of the tacit knowledge content of the Dokra craft in ways that can be interpreted by people who are not technical specialists. In addition it is crucial to do this in a way which does not interpose unnecessary layers of re-interpretations or involve the loss of essential information. (Smith, D. 2001)

Daniel points out that it is important to create a record of the work practices of this informal sector.

It was important to have baseline records of the process and the knowledge associated with it. (Daniel - Interview Feb 2001)

Informal sector here means the sector where there are no recorded formal structures the industrial sector.

The Bankura Project presented an opportunity for Raja to record the changes and to create a commercial web site to promote the craft and create an overseas market while it also presented the opportunity for Daniel to carry out multimedia knowledge archiving to capture and represent the aspects of tacit knowledge. He argues that multimedia archiving has the capabilities to capture the practices of the craftsman:

Recent research and Development carried out at UCWN suggests that that multimedia technologies make it possible to develop adequate representations of skilled performance mediated by the craftsman him-or herself. Particularly valuable in this respect is the capability of multimedia system use a full range of modalities of description, including video, sound, still image, conventional text and technical diagrams. This technology makes it possible to present very complex information in a variety of formats and contexts. (Smith, D. 2001)

Therefore, Daniel argues that this multimedia archive designed for the Bankura Project will present the “skilled performance in parallel with formal text description in parallel languages and a
commentary in voice-over mode, again offering parallel languages’(Smith, D. 2001). Daniel argues that the object of the research to be carried out on the Bankura Project was to produce an archive which will be useful to not only the Dokra people but also of value to academic researchers.

While Raja was interested in recording the current practices and the changes that would take place with technological intervention, Raja was also hoping to help the Bankura craftspeople by extending the commercial aspect to an overseas market by creating a commercial online web site. He explains:

If we wanted to really help them we must help them in marketing. The only way to help them market is go outside India eliminate all middle men then we can also market them as cultural products with a bit of history, with a bit of anthropology. So we can aim at more sensitive buyers. Like you wouldn't mind spending ten pounds and buy a thing if you know the history you see. So we wanted to set up a web site (Raja - Interview March 2001)

The collaboration on the Bankura Project would enable Daniel and Raja to achieve their personal interests through the goals of the project.

6.2.2.4 Participants' interests

Since Daniel’s interest is knowledge archiving, this informal sector with the technological change being introduced was an important and ideal place for the activity of mapping the practices that are likely to change with the introduction of technology. He explains,

... The context was of interest to myself in terms of tacit knowledge intensive, craft base industry. (Daniel - Interview Feb 2001)

Involvement of Raja, in this sector was due to not only his interest in bringing about a visible change during his term as the director but also to the fact that this is one of a number of major projects undertaken by the institute. Daniel elaborates,

This was of interest to Raja, when he became director of NISTADS. ... At the same time, you see, Raja and I have looked at it we have also planned out the academic ramifications. Technological transfer in my point of view and purely on the academic sense and research sense so there is a very high number of points of convergence on our agendas. (Daniel - Interview Feb 2001)

As pointed out by Daniel, he was interested in the research aspect of the change brought about through technological intervention while for Raja it was the practical impact and policy issue. However, both of their interests could be achieved in this collaboration on multimedia archiving of tacit knowledge of the artisans. Raja explains:

I got involved in it because it is part of our work.... What has been a greater interest for me personally is to go beyond what we have to do and make it mine, to see what we can (do to improve the situation) So what we did was we particularly focussed on the artisans, the brass workers. (Raja - Interview March 2001)
As Raja points out he wanted to revive the Bankura Project and turn it around and make it a personal project. Since Raja had joined NISTADS only in 1999, he was eager to make his mark as the new director of the Institution. Bankura Project was one of the projects where he wanted to make a difference as the director of NISTADS.

6.2.3 The phases in the Bankura Project
This section presents the phases of the collaborative activity on the Bankura Project. The phases are divided into six-month periods. Each six-month phase addresses the activities that had taken place within that period of time.

6.2.3.1 Phases: First six months ....(March 2000- September 2000)
After meeting during one of the workshops held in Delhi in March 2000, Daniel and Raja had met informally to discuss possibilities of collaborating on the Bankura Project. From the time Daniel had come across NISATDS Bankura Project, he had been working to set up collaboration with NISATDS to study the situation.

Alongside the activity of technological intervention, Raja also wanted to support the brass workers by marketing their brass work over the Internet. Following the interest shown by Daniel on collaborating in this area Raja decided to visit Brighton to set up the project. During his visit to Brighton Raja and Daniel met and decided to set up a web site, which they registered under the domain name DOKRA.com (Dokra is the name used for the product designed by brass workers from Bankura area).

So that is when we decided to put up a web site so when I went there (to Brighton) we registered the Dokra.com. (Raja - Interview March 2001)

Since Daniel is capable of designing and maintaining a web site, Raja decided to get his help to register the domain name for the brass product and set up a web site. Daniel had been exploring various ways of using multimedia for knowledge archiving in this Project because Raja wanted a commercial web site with history and all the information. Daniel approached the design of the web site as the first phase of multimedia archiving.

6.2.3.2 Phases: Second six months... (Oct 2000- April 2001)
Six months after first coming across NISTADS Bankura Project, Daniel had the opportunity to travel to India to meet up with Raja. Raja explains,

Daniel came again and you see Daniel and I hit it off very well because we were talking of this (Brass workers and the Bankura Project). He is very artistic, is more into arts so we all went together (to West Bengal). (Raja - Interview March 2001)
In their meeting they decided to visit the brass workers in West Bengal to meet and get a first hand assessment of the situation. During this time in India,

We (Raja and Daniel) made an exploratory visit to west Bengal in November in fact what we found there was that the main group of Dokra Craftsmen of thirty six families where essentially with some minor difference working in the same way as they had when they were migrants. (Daniel - Interview Feb 2001)

The visit had given Daniel and Raja the chance to see the current state of the artisans' practices. Although the brass workers have settled down they continue to use the same techniques to produce the objects when they were migrants. Daniel explains,

They have settled now ...They were making essentially the same things. They had problems as manufacture and also not making enough money, their furnaces are inefficient, -temporary furnaces appropriate to migrative lifestyle but not appropriate for settled craftspeople. (Daniel - Interview Feb 2001)

The visit to west Bengal gave both Daniel and Raja an opportunity not only to see the brass workers problems with the traditional work practices but also the problems of those who had been part of NISTADS’ programme of technological intervention which was stagnant.

We visited another site, the site which was designed to be the stalled technology intervention where Craftsman had taken up sand moulding techniques and new furnace technology. (Daniel - Interview Feb 2001)

Making the mould for the casting is the most importance part as the artistic quality of the craft depends on the quality of the mould. Raja explains the process of creating the mould and the casting.

You make an earthen core and you can use earth with sand to make the core. On it with bee's wax you make the replica. On the replica you put very fine clay and that is that becomes the mould then you melt the wax. So first when you make the replica, your artistic work gets copied on the bees wax. When you put clay on it, it is transferred to the clay then you evaporate the wax and fill it with metal. So all the artwork on the clay is copied by metal and then you break the mould and you get the figure. (Raja - Interview March 2001)

The NISTADS group also advised the artisans to add sand to the mould, as this would enable it to be broken off easily.

We had advised them in our stupidity that when you make the mould add sand to it, because it is easier to break the mould. Nobody asked them (the artisans) why do you not use sand. They know that the earth, which goes into the core, can have sand but outside clay should not have sand, because the refinement of the artwork depends on the clay. If you put sand details will be lost. So theses people were appreciative of Nathaiyi's furnace they didn't think much of his artwork. (Raja - Interview March 2001)

So this had affected the confidence the artisans had placed in NISTADS. As a result it had impacted on the uptake of the new furnace technology by the artisans.
The visit to the Bankura region in West Bengal gave Daniel the chance to carry out in-depth interviews with the brass workers and record the process through observing their craft practices.

Raja said,

When Daniel came here (to India) I went with him we interviewed those people, we did quite a thorough job. We went with the consent of the important citizens of that place. We spoke to shop keepers then we went to the village, we spoke to those people and we got those pictures (showing the pictures). (Raja - Interview March 2001)

Unlike during the Floriculture Project, Daniel was prepared and was able get basic footage of the creative process of the brass workers, which was of acceptable quality for multimedia archiving.

Since Daniel is maintaining the Web site “Dokra.com”, Raja was expecting him to upload a few media clips to illustrate the highly complex way in which these decorative brass objects are produced.

Whenever Daniel is free he will put them (on the web site). We have whole sequence of how they do the work. Children doing it and so that was quite a, that is a very nice sequence which Daniel has got and then we'll help them market this thing (the Brass craft products). (Raja - Interview March 2001)

Once arriving back in Wales, Daniel has been working on the material for archiving. He explains,

.... At the moment after the first round I am currently editing some digital footage onto tape and also I am seeking funding in the arts and Humanities research board to visit India again twice within this year to continue this process. (Daniel - Interview Feb 2001)

The edited material was to be assembled as a multimedia archive and uploaded onto the DOKRA.com web site.

In the next few months Daniel and Raja were planning to return to the artisan community to carry out a definitive record of the process and to build a multimedia knowledge archive. Daniel and Raja were approaching the problem as a long-term activity.

We are looking in terms of setting out something, slightly longer term, conferences, and extended seminar with the multimedia in the technology based crafts industries. So we see the whole thing in the development sense. (Daniel - Interview Feb 2001)

Daniel argues that it is important to get the artisans to see and comment the multimedia records in order for it to capture the actual picture as the artisans themselves see it.

Between visits, production of a concept demonstrator multimedia program will be undertaken at the UCWN. The concept demonstrator will then be taken back to the Dokra artisans, who will critique it and advise on the re-shooting of materials which do not, in their estimation, adequately document the processes. The re-edited material will then form the final version of a multimedia programme. (Smith, D. 2001)
To carry out these visits and to continue this study Daniel had to find funds for his travel to India, as the EU-India programme could only provide a limited number of visits. To be precise, one visit per year by any one senior researcher.

After the first phase of the visits and collection of data, activities have slowed down in the collaboration between Daniel and Raja on the Bankura Project.

I spoke to Daniel in November after he went from here. I spoke to him and he was explaining what came about. Because I wanted to know about the EU-India project and what was its role as to continuing to support the collaboration through funding (Raja - Interview March 2001)

Raja had called Daniel on the telephone to know the status of the collaborative activity because of the limited funding. Daniel had responded saying that he was applying for funding from the UK Arts and Humanities Research Board.

6.2.3.3 Phases: Third six months...(May 2001- )

Daniel and Raja have secured funding from AHRB and are now continuing to make progress on their collaborative activity. Daniel had designed the Dokra.com web site; the history of the skilled brass workers in the region of Bankura and images showing a number of ornaments crafted by the brass workers. This site was an important part of the collaborative activity between Daniel and Raja. Raja is expecting Daniel to upload video clips of the brass workers activities, which Daniel had captured during his fieldwork in India, in the near future.

6.3 Interaction and communication

Interaction and communication for the collaborative activity on the Bankura Project has been through face-to-face meetings organised by the EU-India programme and emails have served as the online communication tool when the participants have been dispersed. The face-to-face meetings have been seen as both formal and informal. However there had been one instance where Raja had used the telephone to discuss with Daniel the progress of the project.

Section 6.3.1 presents the face-to-face meetings that had taken place for discussion of the collaborative project while section 6.3.2 discusses the use of online technology for interactions when participants could not meet face-to-face. 6.3.3 presents the time when one of the participants used the telephone to discuss the collaborative activity.

6.3.1 Formal and informal face-to-face meetings

Most of the face-to-face meetings have taken place during formal workshops organized by the EU-India Cross-Cultural Innovation Network or informal meetings during the days around these
workshops and any exchange visits organised by the programme to support the collaborative activity.

As a researcher I was not able to observe these face to face discussions, except when Raja traveled to Brighton to meet Daniel, as there was limited funding for my travel to India. Hence the following information has been extracted from reports written by the participants for the EU-India programme and interviews with the participants.

6.3.1.1 Delhi, India in February/March 2000 – Informal meeting
First face-to-face meeting between Daniel and Raja took place during Daniel’s visit to India in February/March 2000. It was during this visit that Raja introduced Daniel to the Bankura Project. During this time Daniel learnt that there was an opportunity to carry out multimedia archiving in the Bankura Project. Both Raja and Daniel were interested in collaborating on the project as a result the initial idea was put forward to the coordinators after this meeting. Although Daniel was working on the Floriculture Project, he was able to discuss the possibilities of working on the Bankura Project as well.

6.3.1.2 Brighton UK, in June 2000 – Informal meeting
Raja visited Brighton in June 2000. During his visit he had a meeting with Daniel to plan the collaboration on Bankura Project. Raja also requested Daniel to set up a commercial web site for the brass products from Bankura. As a result the Dokra.com domain name was registered.

6.3.1.3 Delhi, India in November/December 2000 – Informal meeting
During this visit to Delhi in November 2000, Raja took Daniel to meet the brass workers in the village of Bankura. This was a two-day visit to the village and Daniel used this opportunity to carry out interviews with the brass workers and observe the process of molding and producing the brass ornaments.

6.3.2 On-line communication and interaction
On-line communication tools like email were the primary means of communication used when the participants could not meet face-to-face. It was seen as the private and informal means of online communication for their activity while the mailing list was seen as a public forum where they could post their studies to a wider audience.

6.3.2.1 Email
In day to day work Daniel uses electronic mail to communicate with his colleagues and his students.
We use email for accessibility and you see the online tutorial but we don't have a formal system. Any student knows that they can contact me whether an issue or a problem and also where appropriate face-to-face. I am easy to get by email. I am also off site and doing the diplomatic side of things. (Daniel - Interview Feb 2001)

He also uses the telephone or face-to-face meetings where email communication would not be adequate although Daniel prefers to use emails for most of his communications. While Daniel uses emails to interact and communicate with his colleagues and students, Raja at NISTADS prefers to use the telephone to interact with his staff and ministers. Both have access to a personal computer on their desks from where they can access their Institution's email servers and the Internet. They also have access to telephone with personal extension numbers.

They have used limited email communication to discuss the project. As discussed in the methodology chapter, I was not able to get access to these limited communications that took place over the emails.

6.3.2.2 Mailing List
As discussed in the Floriculture study, Daniel joined the mailing list as soon as it was launched in September 1999 during the conference in Brighton. Since Raja was not present at this conference, he came to know about it six months later.

Use of the list
After the September conference in Brighton many of the participants had not joined the mailing list so, as a researcher, in February 2000 I sent out emails to all of the participants giving them instructions on how to join the mailing list. By this time the EU-India Cross-Cultural Innovation Network web site was online and the link to the mailing list along with instructions on how to join the list were provided on the site as well. This was also informed to the participants. Following my email, one of the participants from the National Institute of Science, technology and Development Studies mailed me requesting me to add his and his Director's name and email address to the mailing list. This was followed by my email to both participants with instructions for joining the list. Neither of the Indian participants joined the list.

6.3.3 Telephones
In the EU-India programme, it was agreed that the primary communication tool for interaction on the various projects was to be emails although some projects were provided with the TeamRoom facility. The use of telephones for discussions between dispersed participants was not provided. However, unlike in any other project, the participants in the Bankura Project at times have resorted
to using the telephone to discuss the progress of the project. After Daniel's visit to India in November to collect material for multimedia knowledge archiving of the practices of the Dokra people, Daniel was busy assembling a proposal to secure funding from AHRB. However he had not communicated this to Raja Consequently, Raja had telephoned him to discuss the progress on the issues of funding and multimedia footage. Here, unlike other participants from the project Raja as the director of NISATDS has access to budgets to make international calls.

6.4 Some of the issues that affected this collaboration

The progress of the collaborative activity has been impacted by a number of issues arising from different work commitments in the participants' respective Institutions and practical issues such as securing funding to continue the study. Furthermore, although the participants have similar goals, they have been able to divide the task according to their specialty in order to achieve this goal.

Section 6.4.1 presents the impact the participants' different work commitments has had on the collaborative activity, while section 6.4.2 presents the impact of having clear roles in the project. Section 6.4.3 presents the impact of limited funding on the progress of the activity.

6.4.1 Work commitments

During Daniel's last visit to India, he was hoping to stay for three weeks and carry out fieldwork, but he had to cut his visit short and go back to Wales. This was because one of his colleagues in his department had been taken ill and Daniel had to step into the breech and take up more responsibility in his department.

I had to cut my visit short because there was a problem here (in the University) because of a long-term illness of a staff member. I had to take over an additional responsibility. So instead of spending three week to a month in India I spent eight days. (Daniel - Interview Feb 2001)

This additional workload had encroached into the time that Daniel had for his research. As he explains,

It means I am very very tied up and strained for time. Fifty percent of my time is gone and fifty percent of research. So this is become a very peripheral thing at the moment. Not because lack of interest it is simply because of lack of time. (Daniel - Interview Feb 2001)

The change to Daniel's working commitments had not been explained to Raja. As a result Raja was anxious about the "quiet" period. When I visited India in March, soon after speaking to Daniel, Raja told me that he had not heard from Daniel for quite some time.

I haven't spoken to Daniel for a long time. I want to know what is happening . . . (Raja - Interview March 2001).
Due to the fact that I had spoken to Daniel a month earlier, I was able to convey to Raja that Daniel was busy trying to deal with additional work load due to illness of a colleague.

Unlike the research institute in Delhi, the Bankura Project is not part of Daniel's daily university activity as a result any additional responsibilities had infringed on his time and in turn on his research activity. Daniel points out,

> At the moment most of my time is taken up by students and course development. As head of research I am responsible for research development part and that is problematic. So I am setting up structures for secondary staff, so research, personal research takes a back burner. And that is a problem I have. *(Daniel - Interview Feb 2001)*

As a result the time Daniel needs to assemble the gathered material for knowledge archiving seems to be impossible.

> This working on editing this stuff (the video recordings of the artisans in India) something that I have to fit into slots whereas previously fifty percent of my time research time, so the last three or four months it has been quite a game. *(Daniel - Interview Feb 2001)*

Daniel, along with his teaching commitment to undergraduate and postgraduate students, also has to deal with a number of administrative responsibilities and external projects where they act as consultants, product designers and researchers.

> We are doing an art work for British council... The British council for instance, they come to us as the consequence of we have been working with them on various consultancy and so on. We are doing some stuff for General Electrics. Just completed a project for the Gwent Police a photographic calendar- way and life of Newport ... So a lot different things. *(Daniel - Interview Feb 2001)*

The projects have been carried out successfully and quickly. These external projects which Daniel has been involved in have been part of the institute’s activity

> It is an institutional activity. That is my other title "head of research and Enterprise". *(Daniel - Interview Feb 2001)*

Unlike Daniel's collaboration on the Bankura Project, for Raja and NISTADS irrespective of how a project had come into existence, initiated by the government of India (Floriculture Project and Bankura Project) or by the Researcher (Dairy Project), becomes a part of the participant's main activity.

> Yes, you see it (Bankura Project) is part of our work except that what we are trying to do is put social consciousness. It is part of our ... it is very well defined the very fact that it has been there for the last twenty years so it is there. You see rural development is a part of CSIR activity. It has always been. This one project is very much in the heart of the NISTADS Ethos... *(Raja - Interview March 2001)*

Which of the projects get priority is dictated by the nature of the problem and who is dealing with it.
I think the floricultural project is a good one for collaboration for NISTADS but this (Bankura Project) is much higher on the NISTADS' agenda because it is much of a problem. (Daniel - Interview Feb 2001)

It is also important to point out that having the Director of the research institute involved in this project had made it easier, with regards to securing funding and other necessities for the smooth progression of the project.

6.4.2 Roles
Daniel, being the expert in multimedia design, undertakes the task of designing and archiving which is very much his interests as well. Therefore Daniel takes the role of creating the multimedia product while Raja takes the role of the mediator for Daniel to collect the data for that product. Raja also takes the role of the Director wanting to bring about a positive change to the Dokra industry. These clear roles have enabled the participants to organise and approach the collaborative activity where they were able to design the collaboration and discuss issues during face-to-face meetings and work on their respective tasks and roles when they were dispersed.

Raja as the Director of NISTADS was pushing forward the technological intervention, which is his primary interest as the Director, in this project. Furthermore to achieve his goal of bringing about a positive change during his term as the director, he wanted to create an overseas market and have records of the changing practices of the brass workers. So he was relying on Daniel to produce the Multimedia as well as web based records. To achieve this Raja was supporting Daniel by providing the necessary access to the brass workers and the context.

6.4.3 Funding
As a researcher studying the collaborative activity between the participants from India and Europe, I was hoping that Daniel would be able to come to India during the time that I was there to collect data. Such a visit to India would have given me an opportunity to observe Daniel and Raja's activity for my research. Unfortunately, that was not possible due to the slow process involved in securing funding for his travel.

As EU-India could not fund the activities in its entirety, Daniel has been trying to obtain funding from other funding bodies in order to visit and carry out further field study as planned. He explains,

Until Christmas or just after Christmas, Raja and I were in regular email communication on this. It has gone a bit quiet simply because I have been dealing with bureaucracy with the application. Soon as I get that, we'll move on this. (Daniel - Interview Feb 2001)
Because of the slow process in getting funding Daniel was not able to join the next round of visits which were organized in March 2001, by the EU-India Cross-Cultural Innovation Network programme. Daniel elaborates,

So we are in touch on this, I was originally hoping that I might be able to go in the next round of visits but that doesn't look like the case now. That was one of the things that I was hoping to do. 

(Daniel - Interview Feb 2001)

However, a short while after this interview, Daniel and Raja managed to secure funding from the UK Arts and Humanities Research Board (AHRB).

6.5 Success of the collaboration

This section presents the elements that were identified as reflecting the success and failure of the collaboration in the project. Using these elements the success of the collaboration on the project is measured.

Elements used as measure of success of collaboration are: achieving the project's goals, personal goals, maintaining the established links, extending the current project or identifying a new project, creating a product and publishing academic papers on the activity and research.

Achieving the collaborative project's set goals is seen as an element of measure of success as this could have taken place only if the collaboration had been continued. The same can be said of achieving the personal goals. If these have been achieved then there is a possibility that the participants due to the success of achieving the goals would want to maintain links to extend the current project or take up a new one in the future. If the collaboration has progressed smoothly and the participants thought that by extending the project they would achieve goals that have not been achieved so far or to extend the current project to achieve new goals then this was also seen as measure of success of this collaboration. If the collaboration led to the creation of a product then it was also seen as a measure of success. The collaborative activity must have been the catalyst for the creation of the product. The productions of academic publications were also seen as a measure of success as they would discuss the issues that the collaboration set out to investigate. Hence, the following table shows these elements as a measure of success against which the Bankura Project is measured.
The Bankura Project’s goals of creating a multimedia record of the brass artisans in the Bankura region has been achieved as the participants are working on the assembling the product. Furthermore, Raja is able to entice more and more brass workers into taking up the new furnaces, hence he is able to bring about a positive change. The web site to create an overseas market for the brass objects created by the artisans of the Bankura region is already launched.

In this project the personal goals of both participants are tied in very much with goals of the collaborative project. So through achieving the Project’s goals the participants have achieved their personal goals as well.

The personal links that were established are still maintained, as the project is still active. The participants submitted proposals and secured funding from the Arts and Humanities Research Board to sustain the collaborative activity in the Bankura Project. Hence the project is being extended to a longer period.

As planned, the multimedia knowledge archiving is still being carried out while the web site set up for the Bankura Project (Dokra.com) is active with materials collected from the field study. The participants have also published academic papers on the study carried out among the brass artisans in the Bankura region.

### 6.6 Summary
In this Bankura Project the participants have come from working contexts but their interests have been around recording and preserving the artistic skills of the brass workers in Bankura. Daniel who was interested in multimedia archiving had the opportunity to carry out his research in this project while Raja was interested in bringing about change through the introduction of technology while preserving the skills of the artisans. Through informal interactions the participants came to know about their interest in the area and the coordinators supported it. One of the main objectives of the collaborative activity is to build a commercial web site to promote the sale of the brass
ornaments in the international market. The web site was launched last year and is being maintained by Daniel.

Almost all of the decisions and even the birth of the collaboration between the participants took place during face-to-face interactions. But limited emails were used to maintain the link. However when there were no response to emails, telephones were used to discuss the progress of the project.

The roles were clearly identified with Daniel in charge of production of the multimedia archive and Raja in charge of providing the context and mediating to collect material for knowledge archiving. Raja was also able to carry out his interest of bringing about a positive change in the Bankura region. The Bankura Project's goals were tied very closely to the participants' interests, goals and roles.

The momentum of the project's progress has been impeded by unforeseen increased work commitments for Daniel in his institution along with his teaching and administrative commitments. Raja being the Director of the NISTADS, is committed to the project since it is part of his and his institute's main activities. Although Daniel's progress has been impeded it doesn't seem to have affected the motivation of Raja since he does not have to rely on Daniel to carry out his side of the activity.

All of these aspects will be discussed in depth in Chapter 8.
CHAPTER 7. CASE STUDY(4) "DAIRY PROJECT"

7.1 Introduction
After the Floriculture Project came to an end, Kalyani moved to the Dairy Project, which she had been interested in for a long time. Since I was interested in Kalyani's participation in collaborative activities in the EU-India programme I followed her move to and participation in the Dairy Project. This project comes under the dimension of Enterprise and Innovation, in the EU-India programme.

The Dairy case study is presented as a narrative account in this chapter and the factors that have impacted upon the collaboration are identified and discussed in-depth in the Discussion (8) chapter.

In this chapter, I present the collaborative activity of Kalyani and Leo in the Dairy Project. Section 7.2, presents the process of identifying, setting up the collaborative project and the phases of the activity. Section 7.3 addresses the interaction and communication strategies used in this collaborative project. The strategies are represented as face-to-face (7.3.1) and online communication (7.3.2). The issues that have impacted positively and negatively are presented in section 7.4 Section 7.5, presents the elements of the activity as the measure of success of the collaboration and section 7.6, presents the summary of this chapter.

7.2 The Project
In the EU-India Cross-Cultural Innovation Network Programme, academics from Denmark Technical University (DTU), Institute per Lavoro (IpL), Gujarat Law Society (GLS), Punjab Agriculture University (PAU) had come together to identify and set up a collaborative project to carry out action research in the dairy sector. Kalyani, from NISTADS joined these participants in the Dairy Project six months after becoming aware of the project. Coordinating the European group was Leo from DTU while the Indian group was coordinated by Kalyani. The time line of the Dairy Project, from the identification of the project for collaboration through to the various phases of progress can be presented as follows:
### Dairy Project timeline

**Mar 1999**
- Leo visits Punjab and presents the methodology he had designed to study the Dairy sector.
- Leo expresses his interest in applying this methodology to study the Dairy sector in a new context.
- A participant from Punjab Agriculture University (PAU) is interested and collaboration is considered.

**Sep 1999**
- The participant from PAU visits Leo in Denmark and the Dairy project is set up. The first phase of the project is envisaged.

**Nov 1999**
- Leo visits PAU for a meeting on the Dairy Project and presents a paper on networks in Dairy sector in Denmark.
- Kalyani attends this workshop and learns about the Dairy project. She is interested in participating and expresses her interest to Leo and the co-ordination centre.

**Mar 2000**
- Participants in the Dairy project meet in Aachen, Germany and discuss the process. Kalyani does not attend this meeting. Kalyani is assigned the role of the one to conceptualise for the project.

**Aug 2000**
- Kalyani’s role as the one to conceptualise for the research is revised to the role of designing and taking up field studies. The research outline is prepared for the study to be carried out in the various regions in India.

**Dec 2000**
- Leo visits PAU and Gujarat Law Society to attend a workshop and conference. Following this conference the methodology to be used for the study is discussed. It is agreed that the study would be carried out using the methodology that the India participants are familiar with.

**May 2001**
- At this meeting the outcomes of the preliminary studies carried out in the various regions in India and Europe are discussed. The methodology used for the study by the Indian participants is also discussed and the possibility of employing the methodology designed by Leo and Italian participant is raised. It is agreed that the application of the methodology designed by Leo and his colleague would be the next phase.

**Feb 2002**
- Leo meets Kalyani and the other Indian and European participants. Applies aspects of the newly developed methodology for the identification of actors and networks in the Dairy sector, in India.
- Initial results show that it could be applied across cultures.
In this section, I present how the Dairy Project was identified for collaboration (7.2.1) and how Kalyan was introduced to the project (7.2.2). Section 7.2.3 presents the institutions and people involved in the project while section 7.2.4 presents the goal of the Dairy Project. Section 7.2.5 present the interests of Kalyani and Leo which had drawn them to participate in this collaborative activity.

7.2.1 How did it come about?
When the EU-India programme was set up, Leo wanted to extend the study he had carried out in the Dairy sector in Denmark to a new context. Leo had identified the networks and the actors in the Dairy sector in parts of Denmark and when the EU-India programme was set up he saw it as an opportunity to carry out similar studies on the Dairy sector in different regions of India. He explains:

> I have been studying the Dairy sector in Denmark and I suggested that this study could be extended through the EU-India project. When the EU-India project came about I suggested that the dairy sector could be a relevant sector in India and I was interested in it. Because I was doing some research on dairy sector before that so I wanted to use this context to extend my study. It is not accidentally happening. (Leo- Interview February 2002)

Since the Indian participants from the EU-India programme were also interested in mapping the actors and networks in the informal sector, the programme organised Leo to visit India and discuss possibilities of collaboration. Leo visited Punjab Agriculture University, which is interested in the Dairy sector in India, to present his idea for a collaborative project. The participants at PAU were interested in the idea of collaborating, to identify the networks and actors in the sector and how this sector could be developed.

Not only studying the networks in the Dairy sector in parts of Denmark, Leo and one of the participants from Istitute per Lavoro (IpL), Bologna, Italy had designed a methodology to carry out action research. The methodology is called scenario workshops, which is based on the action research approach. As Leo explains:

> The methodology of scenario workshops originates from the action research tradition. The fundamental principle of action research is that the seeds of change are implicit in the very first question we ask. Inquiry and change are simultaneous rather than separate moments. Following the tradition of action research, scenario workshops are participatory (Rasmussen, L 2003)

This method, it is argued allows the members of the community or organization to be involved in bringing about change through active participation. Taking this scenario workshop method, participants from Istitute per Lavero (IpL) and Denmark Technical University have extended it to propose a particular approach to practising this method:
IPL/DTU has elaborated a specific approach of practising scenario workshop. Firstly, some rules have been developed. Secondly, IPL/DTU has further developed the procedure to follow from scenario building through the back casting process to the construction of action plans (Rasmussen, L. 2003)

Having developed this method for action research, Leo and the Italian participants wanted to apply it in a new context. Hence EU-India programme was seen as an opportunity to access the new context.

During the Brighton conference in September 1999, the participant from the Punjab Agriculture University presented a paper on organic farming in Punjab as an introduction to the activities that PAU is involved in. The participant was interested in pursuing the collaboration on the Dairy sector with Leo. But Leo was not able to attend the workshop and conference, hence it was not possible to pursue this idea of collaboration. The co-ordination centre decided that this participant from PAU would benefit from travelling to Denmark to meet Leo and discuss the collaboration on the Dairy sector. The centre also felt that the PAU participant would benefit by visiting the Dairy farms in Denmark, as it would give him an idea of the sector in Denmark enabling him to make comparisons with India and thus identify the factors to develop the sector in Punjab. Hence, soon after the conference in Brighton in September, the participant from Punjab Agriculture University visited Denmark to visit the Dairy farms in Lyngby and to discuss the collaboration, which had been suggested by Leo six months earlier. During the visit to Denmark, the PAU participant and Leo agreed on the Dairy Project and the first phase was envisaged:

As part of project (EU-India programme) work it has been decided to conduct in-depth study of working of Dairy Industry in both the countries. The research reports will be compared at the next conference, which is going to be held in Ahmedabad. After comparing both reports recommendations can be given to improve the functioning of the Dairy industry especially in co-operative sector in Punjab. (Participant, Punjab Agriculture University - six monthly report April-Sept 1999)

Following this meeting in September, Leo had the opportunity to visit India in November 1999, where he presented a paper entitled “Field to Table”. Leo and the participant from IpL had written the paper.

I had presented a paper called “Field to table”. In this paper I had presented my study on how the dairy industry in Denmark works. It starts from the production of milk to the consumer of dairy products. (Leo- Interview February 2002)

Kalyani who attended this meeting and wanted to carry out research in a new area saw the Dairy Project as an opportunity to pursue her interest.
7.2.2 How did Kalyani get involved?

Following the workshop and conference in September 1999 at Brighton, as pointed out in the Floriculture case study, Kalyani spent a week in Aachen Germany. During her visit she explored possibilities of collaboration on studying the technological intervention in the textile sector in Aachen and in the Balucheri region of India. Following her visit, Kalyani proposed a possible collaboration on the textiles sector.

- It was planned to collaborate in the area of Entrepreneurial Innovations, specifically on the following issues:
  - The transition of traditional artisan enterprises to new industrial culture in India and Europe
  - Technology transfer from university to production - to take up a few case studies

(Kalyani - Six monthly report April-Sept 1999)

She sent her proposal on the collaboration to the Archen participant but she did not get a response from him. As she explains,

I wanted to work with the participant from Aachen on Saree. I had submitted the paper on Sari to him. But I have not any response on that from him. Collaboration means what? It is two-way flow not one-way flow. I am not getting any flow from that side. Either some commentary on my work, some criticism, some suggestions or some parallel work should be shred which we can compare on the background. (Kalyani - Interview July 2000)

Consequently, this collaboration on the technology and textiles did not progress from this initial stage. Kalyani then attended the November 1999 conference and expressed her interest in collaborating with Leo. Kalyani explains:

I got interested in it when Leo from Denmark came and collaborations were spoken I showed my interest for the Dairy Project. (Kalyani - Interview July 2000)

To follow up her interest in participating in this collaborative project she contacted the Danish and Italian participants. Leo recalls how Kalyani had joined the collaboration,

I can’t remember the finer details of how it happened but well I know that Kalyani mailed me actually to say that she was interested. (Leo - Interview February 2002)

Kalyani’s interest in collaborating in this project was acknowledged by the Danish and Italian participants.

Leo wrote to me if this is my plan fine and they shall be meeting me if anything is required. In the mean time I got a reply from the academic in Italy also on the Dairy Project. (Kalyani - Interview July 2000)

When Kalyani joined the Dairy Project, it had academics from the Denmark Technical University, Istitute per Lavero, Italy and Punjab Agriculture University designing the collaborative research activity.
7.2.3 Who was involved?
Initially Leo and the participant from IpL were trying to set up the collaboration on the Dairy sector with participants in Punjab Agriculture University. However, when Kalyani showed her interest in the project, Leo having taken up the role of the coordinator for this project, identified her as a possible participant for the project. Following this, Kalyani prepared a proposal identifying the participants in the project and the study she was going to carry out, and sent it to the EU-India programme co-ordination centre and to all the participants in the Dairy Project. In response to this proposal the coordination center informed her that the Gujarat Law Society (GLS) was also interested in the project and needed to be included. As Kalyani explains:

When I submitted my proposal, the (EU-India programme main) Coordinator said you should put the name of Ahmendabad (Gujarat Law Society) also because they are also doing Dairy. (Kalyani – Interview July 2000)

So Kalyani included the Gujarat Law Society in her proposal leading to participants from three institutions from India and two from Europe. Since there were a number of participants in this project, it was decided that Kalyani co-ordinate the Indian participants while Daniel coordinated the whole project as well as the European participants. The participants involved in the Dairy Project can be seen in the following diagram. The participants whose collaboration is taken for the study are shown with unbroken lines.
As discussed above, the first phase of the activity was that the participants in India were to carry out studies of the Dairy sector in the various regions in India. A decision was taken to conduct parallel research studies in both the countries for assessing the progress and impact of the cooperative societies of dairy farmers. (Half yearly report, Oct 1999 to March 2000, from PAU)

This was to be followed by comparing the activities, networks of the Indian Dairy sector against the sector in Denmark. However, Leo wanted to go beyond comparing the two countries’ Dairy sectors and proposing improvements and modifications for the development of the sector in the respective regions. With India providing a number of varying contexts because of the different cultures in different regions, it was seen as an ideal context to carry out further studies on the development of the workshop scenario method for the study of the Dairy sector.
7.2.4 What was the goal?
The goal of the Dairy Project was to carry out studies to map the actors, networks and the processes in the Dairy sector in Europe and India. Furthermore, the Dairy Project was aiming to apply the scenario workshop method to study the sector across cultures and extend it further. According to Kalyani:

A comparison of the dairy sector across the countries would help in identifying similarities and differences which would be related to regional, social and cultural requirements. Similarly, by taking up other sectors like floriculture, plant tissue culture technology based production or artisanal enterprises, a comparative understanding of networking across the sectors with India will be achieved. It may help in generalizing the model of innovation and also in identifying the sector and region specific requirements for the development of competence of a sector. (Proposal submitted by Kalyani for the participation in the Dairy Project)

The Dairy Project seems to incorporate all the participants' interests, which are from practical issues identifying the factors for improving the sector, to research issues such as developing a methodology for the study which would enable to study the networks, structures and activities in the sector.

7.2.5 Participants' interests
In this Dairy Project, Kalyani was interested in studying the networks and actors in the Dairy sector in India while learning about the action research methodology designed by Leo and the Italian participant. Her aim was to identify issues that influence enterprise to knowledge acquisition. She explains the aspects that she would like to understand through her study of the Dairy sector in India.

In the dairy sector, what I am interested in seeing is that here again the whole chain of farm to table involves variety of actors and a variety of institutions. And how those actors or institutions get linked to each other. And what are the back and forth linkages? Which influences what? What are the sources of knowledge? How do they percolate? How it becomes tacit at certain level? How it becomes uncoded to be included into the products or in their practices? So this is a very interesting chain.... (Kalyani - Interview March 2001)

Kalyani goes on to explain the chain and how it is linked in this sector which is based on the local entrepreneurial culture.

I will be pursuing the whole of this process of identification of variety of actors, their participation as individuals or as an institution. How they had been linked in the past. Whether it is a kind of a need-based interaction or whether there was a forced framework where they have been put into - means the co-operative society and its impact. (Kalyani - Interview March 2001)

There is not only the local culture, which can impact on this chain and the activity but also the government and the evolving practices. She also wanted to identify how new practices or knowledge was acquired.

What has been the role of the government? Time to time evaluation of the knowledge means, is there any growth of ideas taken place or is there a routine practice. If there are new practices how they have acquired those practices? Is it through learning by doing or there is there a sourcing-in
of some foreign knowledge outside that structure and what is the role of the R&D institution. 
(Kalyani - Interview March 2001)

Kalyani points out that, different states in India have different approaches to enterprise and that it needs to be recognized and studied. Both Gujarat and Punjab states have an established Dairy Farming sector but both are fundamentally different in their approach.

We consider India itself as Europe and there are so many cultures there are so many regions. Anand Dairy this Amul is a very successful example of Gujarat. And those models have been copied elsewhere and it is said that Punjab has also been developed on that model. (Kalyani - Interview March 2001)

Keeping this in mind she proposes to compare and contrast the Dairy farming activities in Gujarat and Punjab.

So I wish to analyze how much of the (Gujarat) model has been transferred, as such. (Furthermore) what are the modification that has been brought into and if they have not been brought how much it is similar to Anand Dairy and how much is it different from that. What are the reasons for that gap or nearness. So theses are some of the broad based comparisons of the two reasons about the development and in that it is not only the role of the individual or the role of the government but it is also the cultural difference. (Kalyani - Interview March 2001)

The cultural difference between Punjab and Gujarat can be seen in their varying approaches to business. The farmers whose main activity is growing wheat or rice carry out dairy farming in Punjab, which is not the case in Gujarat.

Because in Punjab it is basically a crop farmer who has been farming, using cattle and part of the year he is free in between the crops. (During this) period he can get some return through cattle rearing and dairy to meet personal needs. Whereas in the case of Gujarat, there is the whole concept of entrepreneurship. It is very prevalent, not only in dairy but also in other sectors. You see it is more of a business class. Business means more of a profit rather than a vocational kind of a profession. They take it as a challenging profession (Kalyani - Interview March 2001)

Kalyani hoped to draw aspects of enterprise in these two states while she tried to formulate a methodology for such studies. While Kalyani’s interest was to study the network and the structure of the Dairy sector Leo’s interest was to extend his research to a new context and be open to new experiences.

I have been studying the Dairy sector in Denmark and I suggested that this study could be extended through the EU-India project. So as a framework what we did was to make different case studies and discuss and possibilities of learning from each other. (Leo- Interview February 2002)

Furthermore, Leo also wanted to collect data on the Dairy cooperatives in Denmark to understand the networks and structures. He was also interested in analysing the implementation of the environmental policy implemented in one of the departments of the dairy industry in Denmark. In one of the reports Leo mentions the:

ITS agreed with the biggest Danish Dairy, that a student from ITS is allowed to follow the participatory activities initiated in one dairy (Rodkaersbro in Jutland) in order to analyse how the
environmental policy of the company is implemented in one Department of the dairy. (Leo, Third semester report)

This was envisaged as an aspect of the Dairy Project collaborative activity. Like Leo, for Kalyani, this collaborative project would enable her to carry out research not only in a new sector and but also to learn new ideas and approaches.

Conceptual framework part I may design for them (Punjab Agriculture University researchers) because my focus of the work is this, being in NISATDS, their focus is more on extension of their research. They have more knowledge because they are working in that area. That part of knowledge I may utilize to do the investigation. Their (Punjab Agriculture University researchers) knowledge should be taken I should be making use of that. That is the only purpose of the collaboration or network, maybe across boundaries or may be within the boundary. (Kalyani – Interview July 2000)

She also goes on to explain that through this collaboration she will be learning new techniques and methods by interaction not only with people in India itself but also with people from Europe

What other thing I was looking for was this, Academic from Italy has developed a certain methodology of networking- grid method. Leo from Denmark also has some ideas. ... I want to learn from them. Because when we go for a collaborative projects there needs to be some bit of new (ideas and approaches) rather than data but of the technique that I am interested in. (Kalyani – Interview July 2000)

7.2.6 The phases in the Dairy Project
In this section I present the phases of the Dairy Project from the time Kalyani joined the Dairy Project. The phases are divided into six monthly time scales.

7.2.6.1 Phases: First six months (November 1999- May 2000)
To start the process of collaboration from her side Kalyani had prepared a document outlining the places where she would carry out her study and why.

I prepared one of my own two page paper, in collaboration with the European partners this is the way with India and I will be interested in PAU (Punjab Agriculture University). (Kalyani – Interview July 2000)

At the beginning it was suggested that the data be collected using the methodology developed by Leo and the academic from Italy. But Kalyani wanted to use the existing methodology to collect data so that they could compare the methods.

They are proposing a common methodology but thought given to it in the past couple of months has suggested to me that it is difficult to have a common methodology. There may be similarities or fifty-fifty seventy-thirty. Their approach for a case study may be different from ours. There is also a difference in level of the respondents. (Kalyani – Interview March 2001)

The Indian participants wanted to study the Dairy sector using firstly their methodology as opposed to the methodology developed by the European partners in Denmark and Italy. The idea was that
they would come together with the European partners during the next conference and discuss the strengths and weaknesses of their methodology and the study.

I won't have a chance of using his technology if I don't collect my own data. I collect data with my own methodology and we may take guidance from him, (he) let me know what more I should be collecting so that we can use his methodology. (Kalyani - Interview July 2000)

Kalyani explains why it is important to test their own methodology before adopting the methodology developed by Leo and the Italian participant.

Because there (in Italy and Denmark), the dairy farmer has a different kind of understanding of the situation, the problem, exposure, communication and education than what is existing in India. So I think 100% copying of that is not possible. (Kalyani – Interview March 2001)

Leo agreed with this and during the visit by the EU-India coordinator to Denmark in December 1999, it was decided that the Dairy Project participants would carry out case studies using the regional methods from which they were hoping to identify the main issues behind each regional case.

A decision was made to conduct parallel research studies in both countries for assessing the progress and impact of the cooperative societies of dairy farmers. (Half yearly report Oct 1999-March 2000)

This allowed the research approach to be fine-tuned. Kalyani elaborates the process of carry out the research,

So what we thought was if I collect (data) in my way, they collect (data) in their way and then we meet at some point of time then we can learn at least I can learn from them the method of analyzing. (Kalyani – Interview July 2000)

While this was being decided among the participants, the coordination centre was finalising the participants' role in the Dairy Project. Even though Kalyani had shown her interest in the Dairy Project by submitting a written proposal for what she wanted to study, the main co-ordination centre had decided to set up active collaboration between Academics from Punjab Agriculture University, Gujarat Law Society, Italy and Denmark. This had taken place at a meeting held in Aachen Germany in March 2000, which was attended by the Indian coordinator and the European participants. Kalyani was not present at this meeting and she explains how the Dairy Project had been finalised.

I have a little problem at this moment. They (participants from Denmark, Italy and the main and Indian co-ordination centre) held a meeting in Aachen (March 2000) and they have very nicely worked out everything but I am feeling little not satisfied.... Now the Indian coordinator has returned and he is telling that Academic in Punjab Agriculture University has got collaboration with Academic in Italy (IPL). They have got collaboration with Leo (Denmark technical university) so where does my role go? (Kalyani – Interview July 2000)

The co-ordination centre had assigned the role of conceptualizing and integrating the findings, to Kalyani while she was hoping to actively participate in the field studies. Hence she explains,
But where has he put my name on the Dairy (project)? He has put my name in conceptualization, integration homogenization kind of a written work. (Kalyani – Interview July 2000)

The main Co-ordination centre allocated Kalyani the role of conceptualization and synthesizing the findings of the Dairy Project because it was assumed that she would be interested in that role because she was a researcher from a highly established research institute in India. This allocation of role was made without any consultation with the researcher. Kalyani was feeling unhappy about her passive role in the Dairy Project. She elaborates,

I haven't mailed the (EU-India programme) main coordinator, I have spoken to the (EU-India programme) Indian coordinator and I thought first I'll visit Ludhiana (in Punjab), let me talk to them (and find out) what they are doing and how I can supplement. Then on that basis I have to mail the main coordinator. But I am a little unsatisfied in my present role in that dairy. I want to be doing more for it. (Kalyani - Interview July 2000)

Kalyani enjoys a good working relationship with the coordinator in India, as he had been the director of Kalyani’s institute until early 1999. So at this juncture she had expressed her dissatisfaction to the coordinator in India, about her passive role in the Dairy Project. Kalyani points out that her interest lies in active research, which the role as someone that conceptualizes and synthesizes the research fails to encompass.

7.2.6.2 Phases: Second six months (June 2000- December 2000)

During my visit to India in July 2000, to collect data for my study, Kalyani had not made any headway into changing her now passive role to an active research one although it was only a few weeks since she had talked to the Indian coordinator. Kalyani approached me and asked me to convey her unhappiness to the main coordinator.

I conveyed this to Ragu, the main coordinator in England. Ragu listened to this and mailed the Indian coordinator Arun to discuss this. Finally, Kalyani’s request to be actively involved in the field study of the Dairy sector was agreed on. The redrafted programme also included the approach where Indian partners were to carry out their case study using their methodology and then compare it with the methodology developed by the European participants. It was also agreed that the methodology developed by the European participants would also be tested in carrying out the study in India once the studies to identify the networks and actors had been identified in the Dairy Sectors of Gujarat and Punjab.

Through interactions that followed, Leo emerged as the European coordinator and Kalyani as the Indian one. These roles were assigned by either the members of the group nominating themselves or being nominated by the group.
Since this change the Dairy Project has been progressing smoothly. Kalyani has been working along side Punjab Agriculture University and Gujarat Law Society studying various aspects in the dairy sector. As it is presented in the six monthly report to the EU-India programme:

Interactions with MSc students of PAU for undertaking the field study of Dairy Project were carried out (by Kalyani). It was decided to appoint students/fellows at PAU for fieldwork on Dairy Project work. *(Six monthly report of NISTADS group, April – Sept 2000)*

In the meantime, the participant from the Punjab Agriculture University who had wanted to collaborate with Leo and the Italian participant got a promotion in his institute and was unable to participate actively in the Dairy Project collaboration. As a result a new participant from Punjab Agriculture University was identified for the project.

A few months following the interaction with the MSc student at PAU for the Dairy field study, the students were supported with designing techniques for data collection and Kalyani and the students carried out field visits.

In collaboration with PAU, meetings were held with MSc students in Dairy sector to plan the collection of information on the status and mechanism of operation of dairy cooperative system in Punjab. Students were guided in preparing the questionnaire as per requirement of the study. Field visits of dairy farms and cooperatives and Verka plant in Ludhiana were also undertaken. *(Six monthly report of NISTADS group, Oct 2000 – March 2001)*

Nine months after the roles of the participants had been decided, Kalyani explains her study. She identifies the aspects that affect technological change in any sector.

In the Dairy Project you know. I have been looking into the issue of entrepreneurship development. Technology development, technology diffusion, institutional interaction, role of the government and many things, which are all together, play an important role in the technological change. My basic area is technology and social change .... *(Kalyani - Interview March 2001)*

The first phase of the Dairy Project study was to map the existing patterns in the states of Gujarat and Punjab, which was carried out and a report was submitted.

We have already submitted one report saying about what is the existing pattern, level in Gujarat and Punjab. *(Kalyani – Interview March 2001)*

The studies in Italy and Denmark have also been carried out. In a report prepared for the meeting to held in May at Bologna it is reported that:

The “Overview Reports” of the networks, structures and strategies with the Dairy sector in Emilia-Romagna and Denmark are nearly done and is to be distributed to the other partners of the EU-India Dairy Group in the beginning of March. The report from Punjab is already distributed. The European partners of the Dairy Group have not been able to get information from the Dairy Group in Gujarat. *(Report from EU-India planning meeting in Bologna)*
7.2.6.3 Phases: Third six months (Jan 2001-June 2001)
The second phase of the Dairy Project carried out in-depth case studies in the various regions in the three countries—Denmark, Italy and India (Gujarat and Punjab). This phase consisted of parallel streams of activities in India and Europe.

Case studies that go more in depth regarding the formal and informal ways of practicing milk and cheese processing, storing and/or distribution in the respective European and Indian regions. *(Report from EU-India planning meeting in Bologna)*

The case study in Denmark addressed the knowledge networks and access to knowledge by the actors in the Dairy sector.

A case study will be done of how one of the relatively small and mainly organic producing dairies in Denmark is able to combine practical experiences with scientific new regarding milk products. The study questions is: how to get the knowledge when you need it in a small or medium sized enterprise without having a particular research and development department established at the enterprise? What kinds of knowledge networks are practiced with whom? *(Report from EU-India planning meeting in Bologna)*

Following the submission of the report, Kalyani was planning to start collecting data through her case studies in Punjab.

This is the status quo in our second phase in which part two may be from first week of April. I am going to start my visit to Punjab Ludhiana with Ludhiana partners to take up some case studies. *(Kalyani – Interview March 01)*

Kalyani explains how she proposes to carry out her study along with the participant from Punjab Agriculture University, in Ludhiana, Punjab.

During those case studies we will be interviewing people, meeting them, making certain observations and speaking to them. On that basis gather some experiences and what shape we will give it we do not know that will emerge and we’ll have to see but we know on what lines we have to go. *(Kalyani – Interview March 01)*

These activities were carried out and the data collected to be presented at the meeting to be held in Bologna in May 2001

7.2.6.4 Phases: Fourth six months (July 2001-December 2001)
In Bologna, the participants reported on the progress they had made in their case studies carried out in the Dairy sector. Here the initial plans on applying the scenario workshop method in the India context were also discussed. It was agreed that when the case studies were completed the scenario workshop method would be used to understand and carry out action research in the Dairy sector. This in turn was expected to lead to the development of a manual for practitioners. It is envisaged in the report:

Together these four regional based case studies will improve our common knowledge of how networking in the Dairy sector depends on the regional cultural context. Moreover, they may also qualify how entrepreneurial and University partners may improve their mutual knowledge
networking in formal as well as in informal ways. Thus the shared knowledge from the suggested case studies may be fruitful input to the next phase in which the dairy partners are supposed to develop a manual for practitioners as well as a course for research students and practitioners regarding how to manage complex transformations. (Report from EU-India planning meeting in Bologna)

In the last year and a half Kalyani has been collecting data and writing reports along with academics in Punjab and Gujarat. While Leo was acting as the coordinator for the Dairy Project and for the European side, Kalyani was acting as the coordinator or point of contact for the Indian side of the activity.

7.3 Interaction and communication

Interaction and communication in a project where the participants were dispersed relied on occasional face-to-face meeting supported by online technologies.

Kalyani has been in contact with Leo from Denmark and the Academic in Italy via emails and face-to-face meetings. She goes on to explain the various modes of interaction that she has been involved in regards to setting up and carrying out the collaborative project.

Formal meetings that have been arranged by the main coordinator... may be it is in Europe or may be it is in India. There we are meeting some are with a technical meeting and some are the financial meeting but the people remain the same so it is very difficult to compartmentalize the discussions. Once you are meeting you do it there. Another mode is that there are conferences, workshops and the third mode is (that) we do send our emails to all EU partners and to each other. (Kalyani – Interview March 2001)

Leo points out that major decisions were and are made during face-to-face meetings.

In the Dairy Project we have had several workshops and we have used email. I would say that workshop and the face-to-face meetings, is where any major decisions were taken. Discussions took place in these workshops. I think that for good discussions and decisions you have to meet face-to-face. You cannot achieve this through emails. (Leo- Interview Feb 2002)

So, Leo picks the mode of communication based on the task that is to be achieved. This approach has enabled the collaboration in the Dairy Project to progress smoothly.

Section 7.3.1 presents the formal and informal face-to-face meetings where the interactions for the collaborative activity have taken place. The online tool use to support the collaborative activity is presented in section 7.3.2.

7.3.1 Formal and informal face-to-face meetings

In this context, formal meetings are those which have been organised by the EU-India programme’s co-ordination centre as workshops or conferences. The informal meetings are when participants have organised meetings on their own and are supported by the programme coordination centre.
7.3.1.1 Delhi, India in March 1999
Leo visited India to discuss possibilities of collaborating on trying out the methodology developed, by the Italian participant and himself on the Indian Dairy sector. The participant from Punjab Agriculture University was interested and the Dairy Project was identified as a possible collaborative project for the EU-India Cross-Cultural Innovation Network, programme.

7.3.1.2 Lyngby, Denmark in September 1999
The participant from the Punjab Agriculture University visited Leo in Lyngby to see the dairy farming in Denmark and to organize the collaboration, which was suggested during Leo’s visit to India in March. During this visit the Indian participant had met up with social scientists, visited the local initiative projects, milk producer cooperatives and the Denmark Technical University. There were also seminars and lectures, which addressed issues of dairy farming in India and Denmark. Towards the end of the visit some salient features were identified in the Danish dairy farming context, which was to be tested in the Indian context (Six monthly report April- Sept1999). Thus the first phase of the Dairy Project was drawn.

7.3.1.3 PAU, India in November 1999
Leo visited Punjab Agriculture University for a meeting and presented the paper title “Field to Table”. This meeting was attended by Kalyani who came to know about the collaboration that was being set up between Punjab Agriculture University, Denmark Technical University and Istitute per Lavero, Italy. After this meeting Kalyani had expressed her interest to join the collaborative activity.

7.3.1.4 Gujarat, India in December 2000
Leo visited Gujarat and met up with all the Indian participants of the Dairy Project. During this meeting the study of the Dairy sector in India was discussed with particular attention paid to the use of methodology. The Indian participants insisted that the study needed to be carried out initially using the known methodology in India and then identify the limitations of the methodology by discussions with the European partners. Following that, the newly designed methodology, by Leo and Italian participant, could be applied and compared.

7.3.1.5 Bologna, Italy in May 2001
Kalyani, with all the other Indian participants in the Dairy Project visited Bologna to discuss the progress. At this meeting the studies carried out in the various regions in India and Europe were discussed. The methodology used for the study undertaken in India was also discussed and the possibility of employing the methodology designed by Leo and Italian participant was raised. It was
agreed that the application of this methodology would be a good idea. Hence the next phase of the activity was agreed where this new methodology, developed from the study in Europe, would be applied in India to see whether it could be applied for cross-cultural research of the dairy sector.

7.3.1.6 Delhi, India in February 2002
Leo and the Italian participant visited Punjab Agriculture University and met up with all of the Indian participants in the Dairy Project. The week long visit saw the application of the new methodology, to identify and study the networks of the dairy farmers. It was concluded that the methodology could be applied in this new.

7.3.2 Online communication and interaction
Both the participants have access to the Internet and email servers from their personal computers. They also have access to telephones with their personal extension numbers.

7.3.2.1 Email
Leo and Kalyani have email accounts with their institute although Kalyani has web based email which is her preferred account.

Both participants used email to communicate and interact with their colleagues. Leo uses email as the primary mode of communication when communicating with his colleagues while Kalyani uses the telephone. According to Kalyani, as discussed in the floriculture case study, email is used when she is unable to contact the person concerned via the telephone. She also sees email as a way of keeping records of meetings and decisions made during meetings.

Leo identifies the role of emails in this interaction as a mode used to extend and fine-tune the ideas and discussions that had taken place during face-to-face meetings.

Then emails have been used to refine and fine-tune these discussions and decisions. (Leo- Interview Feb 2002)

The reason he gives for relying heavily on face-to-face meetings is that,

When you are establishing a network when you are trying to become more in line between different network partners then you have to meet face-to-face. (Leo-Interview Feb 2002)

7.3.2.2 Mailing list
Both participants were informed about the mailing list during the September conference in Brighton and six months later. Leo joined the list when he was informed soon after the conference but Kalyani has still not joined the list.
After joining the mailing list Leo posted a message in this public domain which was meant for a particular member of the EU-India programme although it was discussing a particular idea with regards to the Dairy Project. Here the public domain means that the members of the mailing lists can be anyone who is interested in the EU-India programme. It is not restricted to the members of the EU-India programme alone. However, Leo got the response that he was looking for from the programme and the member of the Dairy Project. He was also informed of the nature of the mailing list. This might have been an accidental message or the participants were not conscious of the fact that this mailing list was a public domain.

7.4 **Some of the issues that affected this collaboration**

There have been positive and negative issues that have impact on the collaboration. However, unlike in the Floriculture Project, Leo and Kalyani come from different working contexts and work commitments have not impacted negatively on the collaboration (7.4.1). While the identified roles in the project have affected, at least for a short time, the progress of Kalyani’s activity in this project (7.4.2).

7.4.1 **Work commitment**

Like Daniel in the Floriculture Project, Leo also has teaching, research and administrative responsibilities as an Associate Professor at DTU. Nevertheless, his teaching is linked tightly with his research, as one of the courses he teaches is action research. Hence, with regards to the Dairy Project he has managed to link it with his teaching, hence enabling him to allocate more time to it.

Since he teaches action research methods and any new data or experience can be integrated into the curricula. As he explains,

> Research is part of my daily activity in my institute. As action research methods is one of my teaching commitment in one of the courses I am teaching the students of theses experiences. It is tied into my teaching. *(Leo - Interview Feb 2002)*

As discussed in the Floriculture Project, Kalyani works in a Research Institute where she identifies and carries out research in the area that she is interested in. Carrying out research is her main activity in the institution. Kalyani explains:

> Whatever way I want to study. *(The institute gives) no guidance (as to methodology or direction). Identification of problem through to the completion, it is my task. Successes and failures are mine. Institution is going to provide me with the infrastructure of the support and time. Phasing out time everything is mine.* *(Kalyani-interview July 2000)*

This aspect of both participants being able to spend time on their research has helped the project to progress faster than others. At the same time, the fact that the collaborative activity was taking place
at the conceptual and design level has allowed the participants to approach their respective activities in their contexts within their constraints. Nevertheless, the participants have been successful in completing their assignments and have contributed to the planning and implementation of the various phases of the Dairy Project.

7.4.2 Identifying roles
The negative impact on the collaboration had come from the mismanagement of identifying roles of the participants by the EU-India coordination centre. The coordinators of the EU-India programme had taken the responsibility of identifying the roles of the participants in the Dairy Project and had assigned the role of conceptualising to Kalyani. Consequently Kalyani was disappointed and frustrated as she explains,

Where does my interest lie in terms of active research? Unless I am involved at the field level, just at the theoretical level conceptualization it does not give me an interest. .... So I am still not very much convinced with what has been proposed. My part as an active participant is not reflected. I may conceptualize what they are conceptualizing. I might be preparing reports, but I get bored just with the theoretical work. (Kalyani – Interview July 2000)

This mismanagement could have stemmed from the fact that the coordinators of the EU-India programme made an assumption that Kalyani from NISTADS would prefer the intellectual side of conceptualising and writing reports for the project. However this was not the case and the coordinators should have consulted Kalyani or let the participants identify their own roles.

The participants themselves identifying their roles or the group deciding on the role could be seen with Kalyani being given the role of the coordinator for the Indian group of the Dairy Project.

7.5 Success of the collaboration
This section presents the elements that were identified to reflect the success and failure of the collaboration in the project. Against these elements the success of the collaboration on the project is measured.

The elements identified in the collaborative activity as measure of success were the project’s goals, achievement of personal goals, continued maintenance of the established links, extending the current project through seeking funding from elsewhere and production of academic publications. As discussed in the other cases, achieving the project’s goals can be considered as an element for the measurement of success as the collaboration needs to have worked to achieve the goals of the project. With the project’s goals, achieving the personal goals of the participants can also be seen as a factor to measure success of the collaboration as the reason the participants wanted to participate
in the project is to achieve something. If the collaboration had gone well then it is assumed that the participants would maintain the links that they had made through the collaboration for further projects and collaborative activities. If the participants decided to extend their project further or in a different direction, then it is seen as an element of success. Any product, multimedia or publications were also seen as an element of success as these products have been either a by-product of the project or have been the project’s goal.

<table>
<thead>
<tr>
<th>Measure of Success</th>
<th>Dairy project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects goals</td>
<td>Yes</td>
</tr>
<tr>
<td>Personal goals achieved</td>
<td>Yes</td>
</tr>
<tr>
<td>Maintain the links</td>
<td>Yes</td>
</tr>
<tr>
<td>Extending the current project</td>
<td>P</td>
</tr>
<tr>
<td>Product (Multimedia or other)</td>
<td>N/A</td>
</tr>
<tr>
<td>Publications</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(N/A -Not Applicable, P-Probably)

The project’s goal was to carry out studies to identify the networks and practices and to apply the methodology that had been developed by the European participants.

As seen in the above table, the personal goals of both the participants were achieved in this project. Kalyani was able to carry out research in a new context while Leo was able to apply his new developed methodology across cultures. Both participants were interested in identifying the networks and practices of the Dairy farmers in their respective countries’ Dairy sector and they did identify these issues through this collaborative project.

Nevertheless, part of the activity is still taking place in this project, where participants are learning to use the methodology proposed by the European participants. Hence the links made during this activity are still being maintained.

Even though the Dairy Project has been a success, so far there have been no plans to extend the current project. This might be due to the fact that all the objectives of the project and the participants’ goals have been achieved or are still in the process of being achieved in this activity.

The project has led to a number of academic publications by all of the participants on the Dairy Project, which are being published in the forthcoming book published by the EU-India programme. Publications are also coming out in peer reviewed journals.
7.6 Summary

Leo who wanted to test the methodology he and the Italian participant had developed in a new context introduced the Dairy Project to the EU-India Cross-Cultural Innovation Network programme. He also wanted to identify the networks and practices in the Dairy sector. Initially it was decided that a participant from Punjab Agriculture University would collaborate with Leo and the Italian participant. Kalyani came to know about the collaboration during one of Leo's visit to India and showed her interest in the Dairy Project as she too wanted to learn about new techniques to carry out research and map the networks and practices in a new sector. The Gujarat Law Society was also identified as one of the participants in the Dairy Project. However, the EU-India coordination centre assigned the role of conceptualizing for the project to Kalyani and she was not happy. This impacted on the progress of the collaborative activity, as Kalyani was not able to carry out the studies that she had planned. Subsequently however, the role of conceptualising was changed to field researcher and Kalyani was able to carry out her study. As the project progressed, Kalyani became the coordinator for the Indian side of the activity while Leo became the coordinator for the European side and for the Dairy Project as a whole. The process of identifying these roles of coordinators, especially in the case of Kalyani was done within the Dairy Project group, hence enabling the assignment of roles as being acceptable to all in the group.

The Dairy Project is part of both participants' daily activity as Leo uses the data in his teaching of action research at the University and Kalyani's institute is a research institute, which deals with research and policymaking. Therefore, this enabled the participants to spend time on the research project. This had helped the collaborative activity move faster. It is also important to point out that the collaboration was at the conceptual and design level, as a result the participants, when they were dispersed in their respective working environment, were able to manage time and work on their respective agreed activities at their own pace.

Communication and interaction for this collaborative activity has taken place through face-to-face meetings and online technology. Both participants explained that, all major decisions in this project were taken during face-to-face meetings and emails were used to fine-tune and record the decisions taken during face-to-face meetings. In his daily activity, Leo uses emails as the primary mode of communication with his colleagues while Kalyani uses the telephone. Although this preference has affected online interaction and communication in the other projects, it has not affected the Dairy Project. This might be down to the fact that the activities were decided and designed during face-to-
face meetings that were then carried out when the group was dispersed and the participants have tended to meet face-to-face to update and decide the next phase.

The Dairy Project has evolved rapidly and is still progressing because both participants have shared interest in the area of study, such as developing new methodologies, learning new ideas and identifying the networks and practices in the Dairy sector. The project also had the scope of providing ways where the participants were able to explore their individual interests.

The aspects that have impacted on the collaboration on this project will be discussed in depth in Chapter 8.
CHAPTER 8. DISCUSSION
This chapter presents and analyses the factors that have an impact on the collaboration in a cross-cultural environment. The data analysed here were gathered through interviews, participant observations, and questionnaire and written documents such as reports and academic papers. As discussed in Chapter Three, the themes that are discussed here emerged through open coding proposed by Grounded Theory approach. The concepts were identified from the raw data using open coding. These coded concepts are then grouped under categories according to the relationship between the concepts. These categories were then group under a super category again based on the relationships between the categories, which is referred to as themes. Study of collaboration in a cross-cultural environment, will have to take into account the participants' personal goals, their working contexts, their preference and use of information and communication technology and the role of the coordination centre when the collaboration is within a bigger programme. Using the interacting Activity systems model proposed by Michael Cole (1998) for cross-cultural research. I discuss the potential and limitations of using this activity system model.

The chapter is organised on the basis of the identified themes in order to compare and contrast these themes across all the four cases presented in the thesis. This shows how some factors are present in one case while not in the other, which in turn has affected collaboration.

Section (8.1) addresses the theme “Personal goals”. This section encompasses three subsections; Personal development (8.1.1), Research opportunity (8.1.2) and Career goals (8.1.3). Section 8.1.4, presents the synthesis of these themes with the theory. Section 8.2, discusses the theme “Working context.” Under this section, the two subsections (8.2.1 & 8.2.2) discuss issues of “Commitment and expectations” and “Institutional culture and people”, and their impact on the collaborative projects. Section 8.2.3 synthesises the identified aspects with the theory. Section 8.3 addresses the involvement and the role of the coordination centre with the collaborative projects and section 8.3.2 synthesises this with the theory. Section 8.4 discusses the theme “Interaction and communication”. This section is divided into two subsections: Face-to-face meeting (8.4.1) and Technology for interaction and communication (8.4.2). Under this section the impact of the interaction and communication on the collaboration is discussed along with the preference shown towards one technology over another by certain groups of people. Section 8.4.3, synthesises the theme of interaction and communication with the theory. The conclusion, section 8.5, summarises the aspects
identified and discussed in the chapter and the extent to which the interacting activity systems model was useful to map cross-cultural collaboration.

8.1 Personal goals

This section discusses the aspects of personal goals: personal development (8.1.1.), research opportunity (8.1.2) and career goals (8.1.3). Section 8.1.4 synthesises these aspects with the theory.

Aspects such as personal development, research opportunities and career goals will have an influence on how and why the participants decide to collaborate and how they carry any collaboration through. Peoples' interest in any activity rises from personal goal/interests. Here I define "personal goal" as something that makes someone want to participate in an activity because it would benefit his or her personal development and career advancement. Personal goals address areas around the individuals' professional development. They are referred to as “personal goals” because they reflect the aspects of professional development that are close to the individuals' hearts. These aspects of personal goals are:

a) Personal development
b) Research opportunities
c) Career goals

These three areas of personal goals reflect aspects of participant's interests. The three areas are interrelated. For instance research opportunities may contribute to personal development and this in turn would contribute towards career goals. These have emerged as the motivating factors for the participants in wanting to take part in collaborative projects in the EU-India programme.

"Personal development" is one of the aspects of the personal goals that the participants wanted to achieve through participating in various collaborations in the EU-India programme. The participants see personal development as gaining new knowledge, skills and practices or extending their current knowledge in their respective fields. They also approach these activities not only to satisfy their curiosity but also to have an opportunity to extend their repertoire in their fields.

"Research opportunities" reflects another aspect of the participants' personal goals. This expresses one's desire to carry out research activities and wanting to find environments where this could be achieved, as research would feed into his or her personal development and career goals. In this study the participants were approaching the collaboration to set up new research activities or to try
out existing research approaches in a new context, enabling the participants to explore new ideas and issues that would support personal development.

"Career goals" is another type of personal goal. Career goals is defined as participants’ desires to pursue goals that would impact upon their careers, such as promote their knowledge and their reputation through publications, bring about change in a particular area or in their institution. The drive to identify possibilities for future activities is also seen as a career goal as it would feed into personal development. Some of the participants see participation in the EU-India programme's collaborative activity as an opportunity to address some of their career goals.

8.1.1 Personal development
"Personal development" reflects the participant’s interest in acquiring new ideas, skills and practices, to gain new knowledge in their professional fields. The participants in EU-India programme’s collaborative activities often expressed the feeling that they could acquire new ideas and skills through this collaboration.

The following table presents the issues discussed by Kalyani and Daniel as personal development, an aspect of the personal goals in the Floriculture Project.

8.1.1.1 Floriculture Project

<table>
<thead>
<tr>
<th>Personal development</th>
<th>Kalyani</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Develop and extend her research skills in a new area.</td>
<td>Learn to carry out multimedia knowledge archiving of the informal sector practices in a different culture</td>
</tr>
<tr>
<td></td>
<td>Try out known methodology to study the informal sector in a different context.</td>
<td>Gain experience in carrying out multimedia knowledge archiving of the informal sector</td>
</tr>
<tr>
<td></td>
<td>Learn new methodologies to carry out research in the informal sector</td>
<td>Understand the networks and innovative practices in the informal sectors in India.</td>
</tr>
<tr>
<td></td>
<td>Learn to design methodologies for research in a cross-cultural environment</td>
<td>Collaborate in a cross-cultural environment to design a multimedia product.</td>
</tr>
<tr>
<td></td>
<td>Gain experience in carrying out research across cultural contexts.</td>
<td>Record the changes brought about through technological intervention</td>
</tr>
</tbody>
</table>

As discussed in Chapter Four Kalyani's personal goals with regards to personal development, had already been achieved. As seen in the table above, she was interested in developing and extending her research skills in a new area but the Floriculture Project was not a new area. Furthermore she had devised and used methodologies to study the floriculture market, so working on the same project again would not satisfy her personal goal of personal development. Kalyani was also
interested in carrying out research across cultural contexts but the Floriculture Project did not provide scope for this as did not itself deal with cross-cultural issues, because the flower market and the farmers were situated in Delhi. Moreover her personal goal, that would contribute to personal development, was to learn new methodologies to employ for the study of informal sector.

Kalyani also wanted to design methods to carry out studies on similar informal scenarios across cultures, such as the one being proposed by Leo, in the Dairy Project. However, Daniel, who was interested in multimedia knowledge archiving had the opportunity to pursue his personal goal in this particular project. The Floriculture Project potentially provided the situation to learn to carry out multimedia knowledge archiving of the practices of the actors in this small-scale enterprise. Daniel had carried out multimedia knowledge archiving in the aviation industry and wanted to extend his skills by taking up multimedia archiving in a less formalised sector, such as Floriculture sector. Furthermore it gave Daniel the opportunity to gain experience in cross-cultural collaboration to design a multimedia product as he was planning to collaborate with students from Delhi University to design the multimedia archive. The Floriculture Project also provided the Daniel with an opportunity to learn and understand the networks and innovative practices among the flower growers in India. However this was not achieved, as the project did not progress after the first six months of its inception.

From the table above, it is clear that the participants in the Floriculture Project did not have a single shared goal in the area of personal development. The Floriculture Project itself did not have any scope for Kalyani to pursue her personal goals in personal development as she had carried out her study on it as part of her institution’s activity although the project did provide the opportunity for Daniel to fulfill his goals. The reason that Kalyani’s interest was not represented in the Floriculture Project was because the EU-India coordination centre, without consulting both the participants of their interests, had set up the collaboration on the Floriculture Project. The coordinators had assumed that Kalyani was still interested in the area and would want to work on it while Kalyani had introduced the Floriculture Project to the EU-India programme to show what she was interested in rather than a scenario for possible future study or collaboration.

When there are dissimilar goals, there needs to be reciprocity for the participants to proceed with their collaboration. For instance, if participant “A” has knowledge that “B” would like to acquire, this will be a goal for “B” but not for “A”. This would enable only one of the participant’s goals to be achieved, and these dissimilar goals cannot be fulfilled through the collaborative activity that has
been set up. This was the situation seen in the Floriculture Project where Daniel did not have anything that Kalyani was interested although Kalyani had the Floriculture scenario for Daniel to pursue his goal of multimedia knowledge archiving. Unlike the Floriculture Project the other three cases had similar and dissimilar goals and the dissimilar goals were still achieved, as there was reciprocity in acquiring knowledge.

8.1.1.2 Computer Science Project
Unlike the Floriculture Project, Ajith and Joe in the Computer Science Project had shared goals within this project. The following table presents the concepts extracted from the data that represent the aspects of personal development expressed by the participants in the Computer Science Project. Shared goals of the participants are highlighted in bold.

<table>
<thead>
<tr>
<th>Personal development</th>
<th>Ajith</th>
<th>Joe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✴ Gain experience of collaboration in a cross-cultural educational environment.</td>
<td>✴ Gain experience of collaboration in a cross-cultural educational environment.</td>
</tr>
<tr>
<td></td>
<td>✴ Gain experience on using learning technologies across cultures</td>
<td>✴ Gain experience on using learning technologies across cultures</td>
</tr>
<tr>
<td></td>
<td>✴ Introduce computer based technology into the Educational system for learning and evaluation</td>
<td>✴ Introduce computer based technology into the Educational system for learning and evaluation</td>
</tr>
<tr>
<td></td>
<td>✴ Gain experience to use learning technologies</td>
<td>✴ Learn about using Open source to design systems for educational use</td>
</tr>
<tr>
<td></td>
<td>✴ Gain experience of collaboration in the educational environment</td>
<td>✴ Understand cultural issues for teaching and learning</td>
</tr>
<tr>
<td></td>
<td>✴ Transition to the software side of the network technologies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✴ Introduce open source as an option in designing educational products</td>
<td></td>
</tr>
</tbody>
</table>

In the case of the Computer Science Project, there are at least three shared goals. Both participants were teaching Network technologies for postgraduate students although Joe taught the software aspect of networking while Ajith concentrated on the hardware aspect. As shown in the table above, in “personal development” of personal goals both academics felt that they would gain new knowledge from this activity. Joe and Ajith wanted to gain experience in collaborating across cultures and to use learning technologies in this collaboration. They also wanted to introduce the use of computer based technology into the educational system for learning and evaluation. Some of the skills and ideas that the academics wanted to acquire through this activity for personal development were similar (highlighted in bold) but there were others, which were not. Ajith wanted to make the transition from teaching hardware alone in network technologies to incorporate the software side of it. Furthermore he wanted to gain experience on using learning technologies for his courses and on collaborating in the educational environment. Ajith also wanted to introduce
Open Source in designing educational learning products. In the case of Joe, he wanted to learn about Open Source designing systems for educational use and he also wanted to understand issues that might impact on collaboration across cultures. Although these are personal goals, which were not shared the collaborative activity seem to offer scope to pursue these goals. Goals that are not similar in relation to setting up the objective of the collaboration, may still be achieved because one of the participants has the knowledge for the other to learn from. Hence, it might not be an aspect of personal development of the personal goal for the one who has the knowledge while it could be to the other who does not. In the Computer Science Project, Ajith from India was interested in exploring the area of collaborative learning, which is a relatively new area in India. Ajith also wanted to explore the software side of network technology. Furthermore, Ajith was interested in using this collaborative opportunity to build educational products for self-learning and collaborative learning. In these three areas Joe had experience and knowledge to help and support Ajith in his learning. In the case of Joe, he was interested in learning about Open Source for educational purposes, which Ajith had explored and had experience in.

A similar scenario to Computer Science Project can be seen with Bankura Project.

**8.1.1.3 Bankura Project**

As in the Computer Science Project, the following table presents the concepts identified from the data that relate to the area of personal development in the Bankura Project.

<table>
<thead>
<tr>
<th>Personal goal</th>
<th>Raja</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal development</td>
<td>Record the changes brought about through technological intervention</td>
<td>Record the changes brought about through technological intervention</td>
</tr>
<tr>
<td></td>
<td>Understand the networks and innovative practices in the informal sectors.</td>
<td>Understand the networks and innovative practices in the informal sectors in India.</td>
</tr>
<tr>
<td></td>
<td>Gain experience in carrying out multimedia knowledge archiving of the informal sector</td>
<td>To learn to carry out multimedia knowledge archiving in a cross-cultural environment.</td>
</tr>
<tr>
<td></td>
<td>Collaborate in a cross-cultural environment to design culturally appropriate multimedia product.</td>
<td></td>
</tr>
</tbody>
</table>

Note: Shared goals are highlighted in bold in all the tables.

As discussed in the Floriculture Project table, in the area of personal development, Daniel’s interest is to carry out multimedia knowledge archiving in the informal sector. Both, Daniel and Raja wanted to record the changes brought about through technological intervention, among the brass
workers in the Bankura region and understand the networks and practices of these artisans in this sector. Although Daniel's interest in multimedia archiving might not be directly linked to the interest of Raja, both participants' interest of recording changes brought about through technological intervention was a component of Daniel's multimedia knowledge archiving activity. The Bankura Project provided the environment for the participants to pursue their personal goals of personal development. Since the participants in the Bankura Project had similar goals these goals were represented in the shared objective of the Bankura Project. The shared objective is the overall goal of the collaborative activity on the Bankura Project.

As discussed in the Computer Science Project, both the participants were able to achieve the personal development aspect of their personal goals. Daniel also had the opportunity to pursue his goal of collaborating with the students from Delhi University to design a culturally appropriate multimedia product although this was not Raja's goal. Since the collaboration or the knowledge that Daniel wanted to acquire was not from Raja, and Raja's personal development aspect of the personal goals was already fulfilled, this dissimilar interest did not affect their collaborative activity on this project.

8.1.1.4 Dairy Project

<table>
<thead>
<tr>
<th>Personal goal</th>
<th>Kalyani</th>
<th>Leo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal development</td>
<td>Gain experience in carrying out research in across cultural contexts</td>
<td>Gain experience in carrying out research in across cultural contexts</td>
</tr>
<tr>
<td></td>
<td>Learn to design methodologies for research in the informal sector and in different cultural contexts</td>
<td>Learn to design methodologies for research in the informal sector and in different cultural contexts</td>
</tr>
<tr>
<td></td>
<td>Develop and extend her research skills in a new area.</td>
<td>Understand the dairy sector in India</td>
</tr>
<tr>
<td></td>
<td>Try out known methodology to study the informal sector in a cross-cultural environment.</td>
<td>Learn methodologies used in different countries to study the informal sector.</td>
</tr>
<tr>
<td></td>
<td>Learn new methodologies to carry out research in the informal sector</td>
<td></td>
</tr>
</tbody>
</table>

In the Dairy Project, both Kalyani and Leo wanted to gain experience in carrying out research in a cross-cultural environment and learn to design methodologies for research in different cultural contexts. These were the personal goals in personal development, which could be said to be the shared goals, for the participants in the Dairy Project. Furthermore, the participants also viewed this activity where they could also learn other things that were of interest to them. Leo wanted to use this collaborative activity to extend his research skills to a cross-cultural environment while Kalyani wanted to extend her research skills from the floriculture to the dairy sector. The fact that Leo had
carried out studies in the dairy sector in Denmark allowed Kalyani the opportunity to learn from him, while Leo had the opportunity to learn from Kalyani the methodologies used in India to study informal sectors such as the dairy sector and floriculture sector. The Dairy Project seemed to offer scope for the participants to pursue their interests and goals leading them to identify a shared objective with their personal and shared goals. It also seem to have provided the opportunity for the participants to pursue the personal goals which were not similar but were possible to achieve because one of the participants had the knowledge and skills to help the other.

8.1.2 Research opportunities

"Opportunities for research", another aspect of personal goal, have also been an important reason for the academics wanting to collaborate in this project. This was identified as reflecting the participants' desire to use the EU-India programme and the projects that they had set up as an opportunity to carry out research activities while fulfilling the aspect of personal development. As the participants have discussed, research would be the vehicle for achieving personal development and it would also feed into the other aspect of "Personal goal", the "Career goals".

8.1.2.1 Floriculture Project

The table below presents another aspect of personal goals, "Research opportunities" of Daniel and Kalyani in the Floriculture Project.

<table>
<thead>
<tr>
<th>Personal goals</th>
<th>Kalyani</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research opportunities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>✤ Carrying out research activity in the informal sector</td>
<td>✤ Identify the nodes/actors of innovation in this informal sector.</td>
<td></td>
</tr>
<tr>
<td>✤ Mapping innovation networks in the informal sector.</td>
<td>✤ Map the networks that have evolved in the sector.</td>
<td></td>
</tr>
<tr>
<td>✤ Compare innovation networks in the informal sector across cultures.</td>
<td>✤ Impact of technology in the informal sector</td>
<td></td>
</tr>
<tr>
<td>✤ Compare the use of technology in the informal sector across cultures</td>
<td>✤ Study knowledge transfer in this sector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✤ Cultural issues in multimedia design.</td>
<td></td>
</tr>
</tbody>
</table>

As discussed earlier (and in chapter 4) the Floriculture Project, which was carried out by Kalyani and presented at the EU-India programme, did not offer any scope to fulfill Kalyani's research interest. She was interested in carrying out research activity in studying the networks in the informal sector. Floriculture Project was one of the informal sectors she had already worked on. Unlike Kalyani's situation, Daniel found this project lending to his research interests. Due to these different research interests and the fact that the project did not have any scope for one of the participants to pursue their research interest, although the other participant saw the project as a scenario for his study, there was no collaborative activity. There was a short period of activity where Kalyani
introduced Daniel to the traders and actors in the Floriculture sector and Daniel collected his first round of materials for his study. In the Floriculture Project, Kalyani and Daniel were not collaborating but Kalyani was acting as a mediator between Daniel and the flower traders and farmers. As a result Kalyani did not feel that she was gaining anything from this activity. This made her want to move to another project after the first six months and she moved to the Dairy Project, which she viewed as a scenario to pursue her research interests. Daniel continued to work on the material that he had collected during meetings with the flower traders and farmers but could not take the study further due to poor quality of collected material.

Unlike the Floriculture Project, all the participants in the following three projects, Computer Science, Bankura and Dairy, had opportunities to pursue their research in the theme of personal goals.

8.1.2.2 Computer Science Project

The table below presents the aspect “Research opportunities” of “Personal goal” of the Computer Science Project’s participants Ajith and Joe.

<table>
<thead>
<tr>
<th>Personal goals</th>
<th>Research opportunities</th>
<th>Ajith</th>
<th>Joe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carry out research on collaboration across cultural environments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Study the collaboration of graduate students in a cross-cultural environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigate the possibilities of using open source for designing educational technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carry out research on collaboration across cultural environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Study the collaboration of graduate students to collaborate in a cross-cultural environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test the Ph.D. idea of self organizing system in a cross-cultural environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional data for the Ph.D. and proposal for future study</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Joe was keen to use his Ph.D. idea of self-organizing systems among the Indian and English students to explore whether there would be any cultural difference in how people judged the quality of a web-based resource. While Joe was viewing this collaborative activity to carry out further study to improve and extend his self-organizing system, Ajith was interested in trying Joe's self-organizing system with students in India. Both were interested in involving their students, English and Indian, to collaborate, not only to give the students an opportunity to learn to interact and communicate in an authentic situation, but also to witness any cultural aspects that might affect such collaboration. Furthermore the experience of Joe in designing a product for educational purposes, was of interest to Ajith as he was planning to design an educational product using Open Source.
8.1.2.3 Bankura Project

The aspect of “Research opportunities” of the theme “Personal goal” of Daniel and Raja in the Bankura Project is presented as follows:

<table>
<thead>
<tr>
<th>Personal goals</th>
<th>Research opportunities</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raja</td>
<td>• Impact of technology in this labour intensive, small-scale sector.</td>
<td>• Impact of technology in this labour intensive, small-scale sector.</td>
</tr>
<tr>
<td></td>
<td>• Identify effective ways to introduce technology and change</td>
<td>• Map the networks that have evolved in this sector.</td>
</tr>
<tr>
<td></td>
<td>• Design and introduce policy for the small-scale enterprise sector.</td>
<td>• Identify the nodes/actors of innovation in this small group of artisans.</td>
</tr>
</tbody>
</table>

The participants in the Bankura Project saw the project as offering an opportunity to carry out research. Both, Daniel and Raja, wanted to study and record the impact of technology in this nomadic group of artisans. Studying this area would enable Raja to design and implement effective policies. Raja viewed this collaboration as a case from which ideas could be transferred to other informal scenarios that NIST ADS is involved in. Daniel saw it as an opportunity to carry out his research interest of studying knowledge transfer in the Bankura sector. Daniel not only wanted to map the networks that have evolved among the artisans but was also interested in carrying out studies to identify the nodes and actors of innovation in this small group of artisans and to design a culturally appropriate multimedia knowledge archive.

8.1.2.4 Dairy Project

Kalyani and Leo’s research opportunities an aspect of personal goals as discussed by them, is presented as follows:

<table>
<thead>
<tr>
<th>Personal goals</th>
<th>Research opportunities</th>
<th>Leo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalyani</td>
<td>• Compare innovation networks in the small enterprises across cultures.</td>
<td>• Compare innovation networks in the small enterprises across cultures.</td>
</tr>
<tr>
<td></td>
<td>• Carrying out research activity in a new informal sector</td>
<td>• New context to test his methodology.</td>
</tr>
<tr>
<td></td>
<td>• Mapping innovation networks in the informal sector.</td>
<td>• Test the methodology developed and employed in Europe, in India.</td>
</tr>
<tr>
<td></td>
<td>• Compare the use of technology in the informal sector across cultures</td>
<td>• Identify factors that might affect the design of a methodology for study of small enterprises across cultures.</td>
</tr>
</tbody>
</table>

Unlike in the Floriculture Project where Kalyani’s personal goals were not addressed in the project activity, the Dairy Project offered the possibility for Kalyani and Leo to achieve their personal goals through this collaborative activity.
From the table above, it is clear that Kalyani’s personal goal was to carry out studies in a new informal sector. Kalyani and Leo viewed this collaborative activity as an opportunity to carry out further research to compare innovation networks of small-scale enterprises across cultures. Kalyani’s goal was to study not just the cultures across national and continental boundaries but also within India itself. Various states in India have different approaches to enterprise and how networks are set up and maintained. Moreover she was interested in finding out how the take up and use of technology has been carried out in this informal sector across cultures. Unlike Kalyani, the main research interest in the personal goal for Leo came from the methodology which he and an Italian participant had designed. This was the main motivating factor that had led Leo to propose and set up the Dairy collaboration. This collaborative opportunity with Kalyani would provide Leo with a scenario to try the methodology in India. Leo was interested in finding out the factors that might affect the design of the methodology, for the study of networks in small enterprises, across cultures. This was an opportunity for both participants to pursue their personal goals in the area of research activity and learn from each other.

All the participants in the three collaborative projects, Computer Science Project, Bankura Project and Dairy Project, had the opportunity not only to achieve their personal goal aspect of personal development but also to achieve their goal of carrying out their research. Unlike these three projects the Floriculture Project did not provide the scenario for research for Kalyani although Daniel saw the project as an opportunity to carry out his personal goal.

8.1.3 Career goals
Motivation to participate in a project can be based on a number of factors such as, recognition of the work by the colleagues in the academic environment and/or the institute, the responsibilities the participants have in their working environment and their own curiosity in meeting people and visiting places. Hence career goals is also seen as an aspect of personal goal. The participants seem also to respond to the project in relation to rewards, which can be academic or social.
8.1.3.1 Floriculture Project

The career goals as an aspect of personal goals of Kalyani and Daniel in the Floriculture Project are presented below.

<table>
<thead>
<tr>
<th>Floriculture Project</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kalyani</strong></td>
<td><strong>Daniel</strong></td>
</tr>
<tr>
<td>✤ Contribute to policy making in the informal sectors</td>
<td>✤ Publish academic papers</td>
</tr>
<tr>
<td>✤ Help the informal sector, where possible, through mediating between policymakers and the participants of the informal sector</td>
<td>✤ Travel and meet new people for possible collaboration in the future.</td>
</tr>
<tr>
<td>✤ Bring about change in the informal sector</td>
<td>✤ Publish academic papers</td>
</tr>
<tr>
<td>✤ Travel and meet new people for possible collaboration in the future.</td>
<td>✤ Publish academic papers</td>
</tr>
</tbody>
</table>

When the EU-India programme proposed the Floriculture Project, Kalyani was not motivated to participate in it. For Daniel, this scenario was new and was a fertile ground to pursue his study. However, as seen in the above table, like in personal interests and research opportunities categories, none of the career goals of Kalyani and Daniel were similar, making it impossible for a collaborative project to be set up.

8.1.3.2 Computer Science Project

In the Computer Science Project, the aspect of career goals of the participants as discussed by them is presented in the following table.

<table>
<thead>
<tr>
<th>Computer Science Project</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ajith</strong></td>
<td><strong>Joe</strong></td>
</tr>
<tr>
<td>✤ Build an on-line resource on Networking issues for current and future activities</td>
<td>✤ Build an on-line resource on Networking issues for current and future activities</td>
</tr>
<tr>
<td>✤ Travel and meet new people for future collaboration</td>
<td>✤ Travel and meet new people for future collaboration</td>
</tr>
<tr>
<td>✤ Consolidate the newly founded Institution</td>
<td>✤ Publish in the academic circles</td>
</tr>
<tr>
<td>✤ Recognition by the project leading to recognition in the Institute and the university</td>
<td>✤ Publish in the academic circles</td>
</tr>
</tbody>
</table>

Participants of the Computer Science Project, from the table above, were motivated by a number of issues to participate in this collaboration. Along with the acquiring new skills and practices, opportunity to carry out research, both participants were interested to collaborate to build an on-line resource on networking issues for current and future use in their respective classrooms. They were both interested in travelling to new places and meeting new people to discuss possibilities of future collaborations. As this would enable the advancement of their careers. Apart from these shared career goals, there were other factors that had motivated them to participate in this collaborative activity. Ajith who had joined the Institute of Informatics and Communication at the beginning of
its creation, the year when the EU-India Cross-Cultural Innovation Network programme was set up, wanted to consolidate and extend the capability of his department in the institute. He also wanted to have a role in the EU-India programme, which would be recognised by his Institute and Delhi University. Recognition, like this, would help him to instigate change, introduce new ideas to build his institute and his status in the institute. From Joe’s point of view, the collaboration would give him the opportunity to collect more data for his Ph.D. study and proposal for future study. Furthermore he saw this as an opportunity to publish academic papers in international journals and conferences. These activities were seen by the participants as an opportunity to achieve goals that would impact upon their careers.

8.1.3.3 Bankura Project
Here the aspect of career goals of Raja and Daniel is presented. Some of the goals are directly related to the Bankura Project while the others are general career goals that can be addressed through this project.

<table>
<thead>
<tr>
<th>Personal goal</th>
<th>Bankura Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raja</td>
<td>Daniel</td>
</tr>
<tr>
<td>Career goals</td>
<td>Travel and meet people for future collaboration</td>
</tr>
<tr>
<td></td>
<td>Bring about a positive impact on the NISTADS’s stalled Bankura venture.</td>
</tr>
<tr>
<td></td>
<td>Make a lasting contribution as the new Director of the institute</td>
</tr>
</tbody>
</table>

The participants in the Bankura Project, like in the Computer Science Project, wanted to travel to new places and meet new people to discuss ideas and identify possible collaborations. However, for Raja, it was to make a difference to the community of artisans in the Bankura region. Raja’s predecessors had tried to bring about change through introducing technology but this effort had stalled over the years and Raja who had taken up office as the new Director of NISTADS wanted to breath life into this stalled activity of the institute. This he hoped would become a legacy of his term in office. Unlike Raja, Daniel saw this opportunity to carry out research which would lead to academic publications. Both participants approached the Bankura Project, as an opportunity to carry out activities that would contribute towards addressing their career goals.
8.1.3.4 Dairy Project

<table>
<thead>
<tr>
<th>Personal goals</th>
<th>Kalyani</th>
<th>Leo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>✤ Publish academic papers</td>
<td>✤ Publish academic papers</td>
</tr>
<tr>
<td></td>
<td>✤ Contribute to policy making in the informal sectors</td>
<td>✤ Merge this research activity to teaching research methods at the home institute.</td>
</tr>
<tr>
<td></td>
<td>✤ Help the informal sector, where possible, through mediating between policymakers and the participants of the informal sector</td>
<td>✤ Have the Ph.D. student work on the project and identify new issues.</td>
</tr>
<tr>
<td></td>
<td>✤ Bring about change in the informal sector</td>
<td></td>
</tr>
</tbody>
</table>

During Kalyani’s original study of the Floriculture scenario she was able to bring about change in providing legal and dispute free spaces in the market place for the flower traders to carry out their trade. To achieve this she had to liaise with and mediate between the farmers, the policy makers and the government workers. In turn she was contributing to policy-making in the informal sector. She was driven by similar motivations when she joined the Dairy Project.

Both the participants, Kalyani and Leo, were motivated to participate in the Dairy Project as Kalyani saw this opportunity to carry out research in a new informal sector, while Leo saw the new cultural context as a place to test his methodology. For Leo the research would feed directly into his teaching on research methods at his university and he could contribute to the development of that course. Since he was supervising a Ph.D student it also contributed to his career goal as well as to the publication of his research. Both the participants were interested in publishing their research in academic papers.

8.1.4 Synthesis

From the above four case studies, it is clear that personal goals have played an important part in the setting up and the progress of the projects. The Computer Science, Bankura, and the Dairy Projects had the participants who had shared goals, in personal development, in research opportunities or in career goals. There has been a sense of gaining something out of the activity in all three projects except the Floriculture Project. In the Floriculture Project neither of the participant shared interests in personal development, research opportunities or in career goals. As a result, while the Computer Science, Bankura and Dairy Projects are still active, the Floriculture Project came to a conclusion six months following its inception. Hence it could be argued that for successful collaboration, participants need to have similar personal goals which lead to shared goals which could lead to identifying shared objectives of the collaborative activity.
This leads to the conclusion that, for a collaborative activity to take place and succeed personal goals of the participants have to be recognised and taken into account when a project is being assembled, as failing to do so may lead to the failure of the collaboration.

According to Activity Theory, as Leont'ev points out, "the concept of activity is necessarily connected with the concept of motive" (Leont'ev 1978: 62). The object of an activity is reflective of the motive and he goes on to explain "that motive may be either material or ideal, either present in perception or exist only in the imagination or in thought." (Leont'ev 1978: 62). Here it can be argued that, self-development acts as motive for the activity. The Personal goal of the subject/s or participant/s of the action have to be linked with the object of the activity if the activity is to be completed successfully. Michael Cole (Griffin, P. and Cole, M. 1984; Cole, M. 1988), recognizing the need for a culturally sensitive approach to mapping activity for cross-cultural research, has extended the single activity system, diagrammatically developed by Engestrom (Engestrom, Y. 1987), to an interactive model of activity to accommodate mapping of culturally diverse factors for cross-cultural research (Cole, M. 1998). In this interacting model for comparative study, as seen below (Fig. A), Cole sees the object as a "potentially shared object" (Cole, M. 1998).

Identifying some of the factors for successful collaboration, Schrage (1990) identifies "a shared, understood goal" (p: 152) as one of them. Hence the sharing of goals among the participants in a collaborative activity is a vital requirement. As Teagarden et al. (1995) point out for cross-cultural collaboration to be successful, it is important to have shared understanding and objectives since this would help the researchers utilize the different levels of skills and knowledge in their teams. Merging Cole's argument of shared object for cross-cultural research and shared goal as essential
ingredient for successful collaboration, it could be argued that the sharing of goals leading to a shared object is an important element for cross-cultural collaborative activity. According to Activity Theory, actions are driven by goals, operations by instruments, and activity is driven by motive. Hence it could be argued that shared goals which are representation of personal goals are the driving force behind the various actions, such as publishing papers and learning new skills and practices through this collaborative activity. Self-development is the motive that drives the activity.

In the EU-India Cross-Cultural Innovation Network environment, if the shared goal and shared object is to be arrived at, then the personal goals of the participants from different contexts and cultures have to be translated into shared goals and shared objectives. The shared object needs to represent both participants’ personal goals for a successful collaboration. If this does not take place, then the collaboration would encounter difficulties.

In the Dairy, Computer Science and Bankura projects, in each case both participants’ personal goals could be seen in the shared objective. In the Computer Science Project the participants, Joe and Ajith’s shared goals, which were in personal development, research opportunities and career goals. Both participants were collaborating to learn from each other. Even when there were goals that were not shared the shared aspect of the goals drew them together to work collaboratively. The project was rich enough to accommodate the goals that were not shared but could be achieved through this collaboration.
As seen above in the activity systems diagram (Fig.1), the shared goals of the participants led to the shared objective of designing a collaborative activity for the students of Joe and Ajith to learn network technologies. The Computer Science Project would allow the participants to discuss, learn and achieve their personal goals. The outcome of this collaborative activity between Joe and Ajith would lead to the design of an online resource for students by students.

**Computer Science Project**

(Fig.1)
As seen above in the activity systems diagram (Fig.2), again, in the Bankura Project both participants want to record the changes that would take place with the introduction of technology in the rather traditional practices of the Brass workers in the Bankura region. This was their shared objective in the Bankura Project. Both participants share a goal, although there might be also goals which can be achieved within this project that are not shared. For instance, Daniel had wanted to carry out multimedia knowledge archiving and study knowledge transfer while Raja had wanted to bring about a positive change to the stalled Bankura programme. These are dissimilar personal goals that the participants wanted to carry out and the Bankura Project under EU-India programme gave the opportunity for the participants to achieve these dissimilar goals while achieving their shared goals. It is the shared aspect of the goals that makes these participants to work together as opposed to carrying out the study in isolation. The shared goal of recording the changes among the brass artisans brought about with technological intervention gave both the participants an opportunity to work together. If this shared goal was not present, then Raja would have had to organise other means to record changes and Daniel would have had to approach this scenario alone or pursue some other scenario.

A similar scenario can be seen in the Dairy Project. The goals of Kalyani and Leo may not always be shared but there are personal goals which they do share although it might be on the conceptual level.
For example, both wanted to learn to design methodologies for study of the dairy sector in a cross-cultural environment and gain experience in carrying out research in such an environment. Here the shared object of the participants, as seen above in the activity systems diagram (Fig.3), is to identify the actors and networks in the Dairy sector to design a methodology. It is clear from this, that the shared goals need not be tangible products but may involve processes.

Unlike the above three projects where the personal goals of both participants are represented in the objective of the projects, in the Floriculture Project only one of the participants' personal goal was represented.

As can be seen in the “Floriculture Project” diagram below, the participants had personal goals within the project, but only one of the participants’ personal goals was represented in the “shared object” which had triggered the project. “Shared object” is the goal or object of the collaborative activity. Kalyani in the Floriculture Project viewed the outcome of the collaboration, to create a multimedia knowledge archive, as a useful product for information dissemination among the newcomers in the Floriculture sector but this was not one of the main issues represented in her personal goals. As seen in the Floriculture Project activity systems diagram below (Fig.4) the identified shared goals of the participants were to record actors, practices and networks in the Floriculture sector.
Kalyani’s role in the Floriculture Project was to be of a mediator for the multimedia knowledge archiving exercise to be undertaken by Daniel. According to Activity Theory, even the mediator would have some goal or motive to participate in the activity although the goal may not be directly linked to the objective. This is not the case with Kalyani who did not have any motive to participate and mediate in the activity except to have a multimedia product for information dissemination. This multimedia product was not her goal, it was a goal proposed by the EU-India coordinators. As a result, in the Floriculture Project, there were no shared goals between the participants to arrive at a shared objective in the project. This situation was making Kalyani frustrated and unhappy.

The objective that was identified by the EU-India programme coordinators was not a shared objective as it represented the personal goal of Daniel but not of Kalyani. The reason that the objective did not represent both participants’ goals leading to shared goals, was because the objective for this project was set up by the coordination center rather than the participants themselves. Since the Floriculture Project was set up at the start of the EU-India programme, there was an urgency within the coordination centre to move things forward, which prompted the coordination centre to identify participants and objectives and set up this project. Consequently the project came to an end six months period after being set up.

These four cases suggest strongly that representation of personal goals of every participant in the shared objective is vital if the collaborative activity is to be successful. As seen above, personal interests and goals have to be expressed by the participants in order to arrive at a shared objective, which would represent these personal goals of all the participants.

This can be represented as follows:

\[ \text{Personal Interest/goals} \rightarrow \text{Shared Objective} \]

The participants achieving their personal goals through the collaborative activity, as discussed earlier in the case study chapters, is identified as one of the elements to measure success. Therefore the representation of the personal goals of the participants in the project’s objective would contribute towards successful collaboration.
<table>
<thead>
<tr>
<th>Projects</th>
<th>Participants</th>
<th>Personal goals expressed in the objective</th>
<th>Status of the collaborative project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floriculture</td>
<td>Kalyani  No</td>
<td>Yes</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>Daniel  Yes</td>
<td></td>
<td>Inactive</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Ajith Yes</td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>Joe Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bankura</td>
<td>Raja Yes</td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>Daniel Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td>Kalyani Yes</td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>Leo Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table above summarises the projects and the participants in relation to their personal goals being represented in the shared objective of the collaborative activity. It shows that when personal goal were represented collaboration was successful.

The participants in the three case studies, Dairy, Computer Science and Bankura were aware of each other’s area of interest and as a result were able to identify their shared goals to arrive at a shared objective and set up the collaborative project. Unlike the Floriculture Project, the other three projects had time and opportunities for the participants to meet and get to know each other’s interests before they decided on the collaboration.

### 8.2 Working Context

The working context of participants as discussed by the participants seems to have impacted upon the collaborative activity. The participants of this study come from Universities in India and Europe and a research institute in India. Although the participants who come from Universities share the academic culture, there are differences in practices and approaches between the Universities situated in different cultures.

In this section, participants’ commitments and expectations (8.2.1) in their respective institutions and the culture of the institution (8.2.2) are discussed. These play an important part in the pace of the collaborative activity’s progress and the response of participants to each other and the collaborative activity.

#### 8.2.1 Commitments and expectations

"Commitments and expectation" refers to the participants’ relationship with the institution in which they work. The institutions involved in all of the case studies are either universities or a research institute. Coming from these different institutions the participants are linked to commitments and expectations that are placed on them by the institutions. As a result these different commitments and
expectations impact upon the activity of the participants as we can see in the four case studies referred to in this thesis.

### 8.2.1.1 Floriculture Project

The participants of the Floriculture Project come from a research institution and a higher education institution. Kalyani and Daniel’s role in their institutions and the commitments they have within it are presented below.

<table>
<thead>
<tr>
<th>Working Context</th>
<th>Commitments/Expectations</th>
<th>Kalyani</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position in the Institute</td>
<td>Researcher</td>
<td>Lecturer and Head of Research and Enterprise</td>
<td></td>
</tr>
<tr>
<td>Carrying out research</td>
<td>Teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Generating funding for the school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administration – marking papers, attending exam and course board meetings</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Different working contexts in the Floriculture Project had affected the collaboration negatively. Kalyani is expected to carry out research on a number of areas that NISTADS is involved in unlike Daniel whose main commitment as a lecturer is to teach. Along with his teaching he is expected to carry out research and fulfill his administrative responsibilities. As the head of Research and Enterprise in his institute, he is expected to liaise with businesses to secure funding for his school. As a result the Floriculture Project could only get part of Daniel’s attention while Kalyani’s time is fully spent on the project.
8.2.1.2 Computer Science Project

Position held in and the commitments and expectations of Ajith and Joe in their respective institutions are presented below.

<table>
<thead>
<tr>
<th>Working context</th>
<th>Commitments/Expectations</th>
<th>Ajith</th>
<th>Joe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position in the Institution</td>
<td>Systems manager and lecturer</td>
<td>Lecturer and course leader</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the Computer Science Project Ajith from DU has the responsibility for setting up the computer networks for the Institute of Informatics and Communication. Ajith who was at that time preparing to leave India to take up a post in Canada was convinced by his superiors from the University of Delhi to stay and help build the new Institute of Informatics and Communication. Since setting up the Computer Science Project with Joe, Ajith had been assigned to extend the computer networks beyond his institute to all of the eighty colleges of the Delhi University, which are situated on the north and south ends of the city. As a systems manager, his primary responsibility is to set up and maintain the computer networks and the systems for the institute. But this did not exclude him from having to contribute to the teaching activities of the institute. Ajith was also responsible for academic as well as administrative activities with regards to postgraduate students who were following a computer science course. Because Ajith’s official status in his university is that of a Systems Manager, he is not encouraged to carry out research. The University may see carrying out research as unnecessary for a technical person. So it was important that Ajith was given a prominent role in the EU-India programme, if he were to participate in any research activity. In the first year of the setting up of the Computer Science Project, Ajith was identified as a Network fellow by the EU-India programme. However, this was not seen as an important role by his institute to give him the flexibility to carry out research or to collaborate in the activity. Consequently the collaboration was very slow to get off the ground. However, in the second year Ajith was identified as the coordinator for the Delhi University by the EU-India programme and this gave him the power to put more resources into the Computer Science Project enabling the project to gather pace.
In contrast to Ajith, Joe’s primary responsibility is to teach. As a lecturer of computing and information sciences, he lectures to undergraduate and postgraduate students. He also delivers an e-learning course of which he is the course leader. Due to this he has responsibilities not only with teaching but also of the administrative responsibility with regards to delivering the course and conducting examination. Nevertheless Joe is expected to carry out research. The School and the University encourage and support research activity. The University and the School in principle allows lecturers to set aside time to carry out research in their respective areas of expertise.

8.2.1.3 Bankura Project

Like in the Floriculture Project, the participants in the Bankura Project come from a university and a research institution. Raja and Daniel’s commitments and expectations from their respective institutions are presented below

<table>
<thead>
<tr>
<th>Working Context</th>
<th>Bankura Project</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitments/Expectations</td>
<td>Raja</td>
<td>Daniel</td>
</tr>
<tr>
<td>Director</td>
<td>Lecturer and Head of income generator</td>
<td></td>
</tr>
<tr>
<td>Contribute to policymaking</td>
<td>Teaching</td>
<td></td>
</tr>
<tr>
<td>Oversee research activities</td>
<td>Generating funding for the school.</td>
<td></td>
</tr>
<tr>
<td>Manage funding</td>
<td>Research</td>
<td></td>
</tr>
<tr>
<td>Liase with other research institute in the country</td>
<td>Administration – marking papers, attending exam and course board meetings</td>
<td></td>
</tr>
<tr>
<td>Bring in new projects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Raja’s commitment to the Bankura Project is quite different from any of the participants in the other three cases. Raja, when he took office as the Director, Bankura was one of the main programmes that the institute was committed to. As discussed earlier, The project had become stagnant and Raja wanted to revive it during his term of office. Raja’s commitment and expectations in the institute is that of contributing to policymaking. The institute has a direct impact on policy makers and policies as the research carried out in the institute is fed into policies. As the director he has the responsibility to bring in new projects, monitor any that have been taken up by the researchers in the institution and manage the funds of various projects undertaken by the institution.

In contrast to Raja, Daniel’s commitments and expectations are similar to Ajith, Joe and Leo. His primary responsibility as a Senior Lecturer at the UWCN, is to teach. He teaches undergraduate and postgraduate students in Media and Art and has to deal with all the administrative responsibilities that go with it. In regards to research activity, he is encouraged to carry out research by his institute.
Unfortunately after setting up the Bankura Project, one of Daniel’s colleagues in his institute was taken ill and Daniel had to take up his colleague’s responsibilities until the long-term illness of his colleague was cured. Since joining the EU-India programme, Daniel has been appointed as the Head of Research and Enterprise. He, working with a team, is expected to generate funding for the school by securing business contracts. This entails him with responsibilities such as writing business proposals, reports, meeting with clients and delivering agreed products. Because of the increase in Daniel’s various responsibilities the pace of progress of the Bankura Project had been affected at times and had affected the collaborative activity.

However, into the second year of the Bankura Project, Daniel had to find funds to travel to India to carry out his field study as the EU-India programme could only fund one trip for each researcher every year. Daniel had to find funding not only for his travelling but also for resources to carry out multimedia knowledge archiving. Hence, Daniel and Raja had written a proposal and secured funding for Bankura Project from the Art and Humanities Research Board. Writing the proposal and securing the funding had also slowed the progress of the activity, because of the bureaucracy of applying to such funding bodies.

### 8.2.1.4 Dairy Project

Kalyani and Leo’s commitments and expectation in their respective working contexts are presented below:

<table>
<thead>
<tr>
<th>Dairy Project</th>
<th>Kalyani</th>
<th>Leo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position in the Institute</strong></td>
<td>• Researcher</td>
<td>• Lecturer</td>
</tr>
<tr>
<td><strong>Working Context</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Commitment/Expectations</strong></td>
<td>• Carrying out research</td>
<td>• Teaching</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Administration – marking papers, attending exam and course board meetings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ph.D. supervisor</td>
</tr>
</tbody>
</table>

The commitments and expectation of the participants, of the Dairy Project, in their respective institutions are quite different. Kalyani’s has the freedom to identify, design and carry out her research activity. Furthermore she can also be assigned to particular project based on her expertise.

In comparison to Kalyani’s work commitment, Leo is a Lecturer at the Technical University of Denmark and his main responsibility is teaching and all the activities that are associated with the
course and examination. As in the Universities in England, Leo's University encourages him to carry out research. Furthermore Leo teaches action research to undergraduate and postgraduate students and research activity in the Dairy Project feeds directly into his teaching. This makes collaboration easier and faster than the collaboration in the Bankura Project and Computer Science Project. The Dairy Project has moved with considerable pace due to, among various other factors, the fact that the participants' research activity is tied in with their daily activity. Moreover Leo supervises Ph.D. students and one of the students is carrying out his study in the Dairy sector in Europe, which is part of the EU-India programme. As a result this too is closely related to Leo's research activity in his institution.

8.2.2 Institutional culture and people
The term "institutional culture" refers to the activity the institution is involved in. The "people" here addresses the community that is participating in the institute and forms part of the culture of the institution. Due to different institutional cultures and the different work practices of the participants have impacted upon the motives and commitments of participants to collaborate and the collaborative activity.

8.2.2.1 Floriculture Project
The following table presents the institutional culture and the people that Kalyani and Daniel interact with in their working context.

<table>
<thead>
<tr>
<th>Working Context</th>
<th>Kalyani</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional culture</td>
<td>Research institute</td>
<td>Higher Education</td>
</tr>
<tr>
<td>People</td>
<td>Researchers</td>
<td>Academics</td>
</tr>
<tr>
<td></td>
<td>Research subjects</td>
<td>Students</td>
</tr>
<tr>
<td></td>
<td>Policy makers</td>
<td></td>
</tr>
</tbody>
</table>

In the Floriculture Project, the participants come from a university and a research institute. Kalyani (NISTDAS) has the freedom to carry out research. The only expectation of her institution is that she sets up and carries out research. She liaises with other researchers in the institution during team activity. Most research activity is commissioned by the various ministries, which are planning to introduce or draw up new policies. As a result Kalyani's research results have a direct influence on the policies that are being considered by various ministries. Government as well as commercial sectors can commission research or it can be proposed and set up by the researchers at NISTDAS. The Floriculture Project came into existence when the Ministry of Commerce commissioned
NISTADS to carry out a study on the productivity and expansion of the newly emerging flower market in Delhi. The director of the institution introduced Kalyani to the project and after the first three-month study, the Ministry extended it to a one year long activity, which was undertaken by Kalyani.

Unlike Kalyani, Daniel as a lecturer at UWCN is mainly committed to teaching along with his responsibility as the Head of Research and Enterprise. Therefore research activity gets allocated only a small potion of his daily time, although the university encourages and supports academics to be research active. The people he interacts and works with are fellow academics and students in the university. As a lecturer he is expected to deliver lectures and support students through their various courses while attending exam and course board meetings. The research activity is carried out in the limited time during daily activity. In the Floriculture Project Daniel needed someone to transcribe and design the multimedia product that he was hoping to produce. But such support staff are not offered to lecturers for research activity and they can only become available through securing extra funding from funding bodies outside of the university. Consequently, the preparation of materials for multimedia archiving did not take place. While Daniel was trying to deal with the lack of resources and time to make progress in the Floriculture Project, Kalyani did not find further research role in it and found this situation frustrating. In the meantime Daniel realized that the footage he had filmed during the field visits of the Flower markets was of poor quality and could not be used for multimedia archiving. This difference in work practices between the participants, was one of the contributing factors to the Floriculture Project coming to an end after the first six-month period.

### 8.2.2.2 Computer Science Project

Ajith and Joe’s culture of the institution that they work in and the people whom they work with are presented in the table below.

<table>
<thead>
<tr>
<th>Working Context</th>
<th>Computer Science Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional culture</td>
<td>Ajith</td>
</tr>
<tr>
<td>Higher Education</td>
<td>Higher Education</td>
</tr>
<tr>
<td>People</td>
<td>Academics</td>
</tr>
<tr>
<td>Students</td>
<td>Students</td>
</tr>
</tbody>
</table>
In the Computer Science Project both participants come from similar institutional cultures, higher education. The institutions involved in this collaborative venture are universities, which award graduate and postgraduate degrees. Despite this, the method of course delivery and content vary significantly. In the Network Technology section of the Computer Science course, which Ajith delivers, the University of Delhi addresses the hardware side of the Network Technologies while the University of Brighton, Joe’s school, concentrates on the software side. This difference was seen as an ideal situation to set up collaboration between the students who were following the Networking aspect of the two courses. The intake of students in both academic institutions for the MSc in Computing is rather different. Students in Delhi University are graduates in science, especially physics or mathematics, whereas University of Brighton students tended to be from the Humanities and there are no technical prerequisites. Ajith at the University of Delhi still uses the traditional classroom based delivery of lectures, while Joe from the University of Brighton has incorporated the new technologies to deliver his lectures. The Computer Science Project was seen as a collaborative activity where Ajith would have the opportunity to learn from Joe to incorporate the new technologies for educational purposes. The participants wanted to collaborate to set up a project for postgraduate students to collaborate on issues of networking technologies.

To play an active part in this Computer Science Project, Ajith, who is a systems manager needed to be recognised by the EU-India Cross-Cultural Innovation Network programme as someone with higher responsibility in the programme. At first, when Ajith joined the EU-India programme, he was identified as a Network Fellow. This was according to the funding criteria of the project. The University of Delhi considers a network fellow as equivalent to being a student. Consequently, Ajith found it difficult to involve support staff to the Computer Science Project. Furthermore, when the administration changed in Delhi University during the EU-India programme, Ajith had to present his involvement in the EU-India programme to the new administration before he could continue with his participation in the Computer Science Project. This slowed the progress of the activity. Following this, the EU-India programme identified Ajith as the coordinator at the Delhi University and as a result he was able to appoint support staff to the Computer Science Project. Now Ajith had authority to set up research activity with regards to the EU-India programme in Delhi University.

The hierarchical administrative system that prevails in Delhi University is different from that of the University of Brighton. In contrast to Ajith’s position, Joe from the University of Brighton can join any collaborative activity and set up research projects without having to have a prominent role in
the collaborative programme that he is attached to. Joe has relative autonomy to decide his research ventures.

The culture of the institution also incorporates certain groups of people, hence the people the participants work with in their daily working context affect the collaboration. In the context of higher education, both Ajith and Joe work with academics and students. Ajith works with academics not only to teach the various courses in the institute but also to set up the computer network systems. Since Ajith lectures on network technologies to postgraduate students, his teaching and delivery methods are designed to meet the needs and expectations of the students of Delhi University. Ajith carries out most of his research for teaching from publications and his lectures are exam focussed. The students expect the lecturers to provide them with notes and also expect the exams to be set around these notes. In the case of Joe, the lectures to the postgraduate students are led by introduction to the main points of the area of study followed by the students being given key reading materials and encouraged to carry out their own research into the area of study. Joe posts his lecture materials on the course web site with relevant references for further reading. Ajith, through this collaborative activity, was expecting to introduce Joe’s method of teaching and incorporating the new technology into teaching.

Since the Computer Science Project was to set up collaboration between the students in India and England to learn network technologies, not only the teaching methods that would affect the collaborative activities of the students but also term times and curricula. This in turn affects the collaboration of the academics because of the time they have for collaboration and the approach to the design of the activities. Due to different term times Joe and his students were busy with coursework and examinations while Ajith and his students were still following the main lecture course. As a result it was difficult to identify a “window” where both groups of students were able to participate in the collaboration.

There are also differences in curricula that caused problems. In regard to curricula, as Joe has explained in his interviews (Chapter 5), the University of Brighton students learn the basics of network technologies when they start their course while the University of Delhi students join the course with advanced knowledge of network technologies.

In addition to term times and curricula, the Computer Science Project comes outside of the daily activity of the participants involved. Ajith has to use his own time if he were to participate in this
collaboration, as it is not integrated into the daily activity of the institution. As a result it does not become part of the participant’s daily activity. It is the same for Joe; the Computer Science Project is not integrated into the school’s daily activity or into Joe’s daily work commitments, although the School and the institution encourage research and international collaboration.

One preliminary conclusion is that collaboration between two academic institutions from different countries is impacted not only by the cultural difference of learning and teaching but also by practical issues such as curricula and term times.

8.2.2.3 Bankura Project
This table presents Raja and Daniel’s respective institutional cultures and the people they work with in their work environment

<table>
<thead>
<tr>
<th>Working Context</th>
<th>Bankura Project</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional culture</td>
<td>Raja</td>
<td>Daniel</td>
</tr>
<tr>
<td>Research institute</td>
<td></td>
<td>Higher Education</td>
</tr>
<tr>
<td>People</td>
<td>Researchers</td>
<td>Academics</td>
</tr>
<tr>
<td></td>
<td>Policymakers</td>
<td>Students</td>
</tr>
</tbody>
</table>

One of the participants in the Bankura Project comes from entirely different working contexts to that of the participants from the Computer Science Project. Raja, who is the director of NISTADS, is working in an institution, which has research and policymaking as its main activity. Like Kalyani, Raja’s work practices, centres around research and policy contributions. The researchers from the institute have the freedom to take up any research study in any sector and issues that might contribute to any policies under consideration. The research activity in the institution is generated either by the institution based on policy making, or it can be commissioned by a government ministry. Research activity can also be taken up for commercial sectors. The researchers can decide on the method and the length of study. Research projects can start with a short study and be extended by the party commissioning it or by the researcher and the research institute. Raja liaises with policymakers based on the research activity by his institution and its impact upon the policies under considerations, while Daniel works in a higher education institute where his primary commitment is teaching. He liaises with other academics to design and deliver course modules for the classes he is or will be teaching. Furthermore he has to support and direct the students in their learning while delivering lectures on the various courses. In the area of research Daniel is expected
to carry out research as a member of the academic staff. However, the time allocated for research activity is limited since Daniel, as the Head of Research and Enterprise, has to meet up with clients to set up projects with the University.

These diverse working contexts have impacted upon the collaboration of the Bankura Project. Daniel, during one of his visits to India, had to cut his visit short because one of his colleagues was taken ill and he had to share his colleague's teaching responsibilities. This additional responsibility took up the time that Daniel had set aside for his research activity, which affected the pace of the progress of the Bankura Project. This sudden increase in responsibility and decrease in time for the research activity was not communicated to Raja. As a result Raja was at times frustrated as to the slow response and movement from Daniel's side. This was accentuated by the fact that Raja works in a research institute where the entire focus is on the research activity alone while for Daniel research activity, at best of times, is only around one third of his daily activity. The goals of both participants in this project are also influenced by the working institute's culture. For Raja and NISTADS the research activity is to make a visible and tangible change by contributing to policymaking, while for Daniel and the University the research goal is to publish in academic circles contributing to knowledge creation.

A similar situation can be found in the Dairy Project. Unlike the Bankura Project, both participants' research activities have been incorporated as part of their daily activity making the project develop faster than the Bankura Project has.

### 8.2.2.4 Dairy Project

The following table presents the institutional culture and the people whom Kalyani and Leo work with in their respective working contexts.

<table>
<thead>
<tr>
<th>Working Context</th>
<th>Kalyani</th>
<th>Leo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional culture</td>
<td>Research institute</td>
<td>Higher Education</td>
</tr>
<tr>
<td>People</td>
<td>Researchers</td>
<td>Academics</td>
</tr>
<tr>
<td></td>
<td>Research subjects</td>
<td>Students</td>
</tr>
<tr>
<td></td>
<td>Policymakers</td>
<td></td>
</tr>
</tbody>
</table>

The participants from the Dairy Project come from similar working contexts to the participants from Bankura Project. As discussed earlier, Kalyani has the freedom to take up any research activity she
thinks she is able to and liaise with anyone to complete the project. She deals with members from the Ministry of commerce, her co-researchers, when they are part of a team, and with the subjects whom she is studying. Her findings generally feed directly into policies that are being considered or being experimented with. Since the institution has direct links with the Ministry and the policymakers, its contribution to any venture is important. Kalyani, in her various research activities, has brought to the attention of the Ministry the needs and possibilities of the scenarios undertaken in her study that may not have been part of the research plan.

At NISTADS, the depth and breath of studies undertaken by the researchers are left to their own discretion and the clients needs. This flexibility allows the researchers to carry out their study in the direction that they see fit.

In contrast to Kalyani’s position, Leo works in a University and his primary responsibility is to teach undergraduate and postgraduate students. Leo, like other academics in the cases discussed, liaises with his academic colleagues to deliver his course while supporting his students in their various courses. As a result, his research activity takes second place although the university encourages its academics to be research active. He, like the other academics from other three cases discussed, has roughly one third of his daily time allocated to research. However, as discussed earlier, Leo’s Dairy Project research is linked very closely with his teaching of action research to his students and his supervision of one of his doctoral students. This integration of the research activity in his daily activity has made it possible for Leo to commit the time and effort into the Dairy Project as Kalyani and enabling it to progress at a steady pace.

8.2.3 Synthesis
In the EU-India Cross-Cultural Innovation Network programme, the participants who are situated at a distance interact and communicate over the internet to collaborate. In this context, the term cross-culture is seen not just across national cultural boundaries but also that of institutional cultural differences. To understand the collaborative process in a cross-cultural environment, it is important to take into account the working contexts in which the participants are situated, as the context would influence the process and the outcome of the collaborative activity. In the projects that have been carried out in the EU-India programme, the participants come from different countries and different academic environment. In the Computer Science, Bankura, Dairy and Floriculture Projects, the participants come from the higher education institution in India and Europe or a research institution in India. As a result the participants’ work practice and institutional cultures
vary, impacting upon the collaborative activity. Difference in work habits might affect collaboration as participants might not want to communicate because of the difference in work habits (Ragoonadan, K. and Bordeleau, P. 2000). Hence it is vital to address the context of the participants. The people whom they work with in their institutions also influence the work practices of the participants. Furthermore the official position of the participants in their respective institutions leads to commitments and expectations from the participants by the institutions.

To map the participants’ working context, Cole’s (1998) interacting activity systems model is used. In Activity Theory, the activity itself is seen as the context. As Nardi (1996) explains “what takes place in an activity system composed of object, actions and operations is the context”. Furthermore “context is both internal to people-involving specific objects and goals- and at the same time, external to people, involving artefacts, other people specific settings” (p: 76). This internal and external are fused in Activity Theory. Kaptelinin (1996) points out that Activity Theory as one of the “concrete versions of the contextual approaches” (p: 46) in studying the human-computer interaction. Cole (1988; 1999) argues that in cognitive development, the cultural context of the participants is important. Furthermore, difference in work practices and cultures have an impact on the collaborative activity (Amabile, et al. 2001).

In the Computer Science Project Ajith’s position in the institution is that of systems manager. As a result he has commitments that are to do with setting up and maintaining computer systems for the institute while also undertaking his teaching responsibilities, whereas Joe is a lecturer and his commitment is both to teach and carry out research. This difference in work practice makes it difficult to find a common practice to set the collaboration on. The participants in this project did identify the teaching as the common practice but have had to struggle with the difference in priority placed by their institutions because of what they are expected to do. Even in the common practice as teaching, the participants have different approach to delivering it. Hence it is important to take into account the local learning and teaching styles if there were to be a learning activity designed and delivered across cultures.
As mapped in the above "Computer Science Project" activity system diagram (Fig. 1) Joe's object would be to deliver lectures and the outcome of the students gaining an understanding of the subject matter. He would have carried out a number of actions, such as preparing for the lecture and so on, before carrying out the activity of delivering the lecture. He may have also had the support and contribution from other members of the academic community and computer experts to preparing and delivering the lecture. This is carried out within the rules of the institution on its commitment to provide education. In contrast, Ajith's main activity would be to setup and maintain the computer systems at the University, but if his activity of lecturing be mapped then he would have a similar system that of Joe. The difference in their activity are based on the difference in the rules that they follow within the culture of the institution and the mediating tools employed to deliver the lecture. Furthermore the work practices of the institutions in which they work in too impact upon the activity.

The mediating tools for the activities are different in these different contexts of the participants and will be discussed in the interaction and communication section.

In the Computer Science Project, Joe acts as a facilitator to his students learning while Ajith at the University of Delhi is expected to act as an instructor. Here the term "instructor" is used as someone who imparts information and knowledge to passive learners while the term "facilitator" is that of
someone who expects the students to be active learners. The rules of the institution make the culture of the community. As a result when the collaboration takes place across institution, these different cultures would impact upon it (Dunlap, R D et al. 2000; Amabile, et al. 2001). The institution where Ajith works, the administrative system is hierarchical. As a result Ajith cannot take up any research projects which would involve the institution without the permission of the administration whereas from Joe’s point of view, as an academic, the institution gives him the freedom and encouragement to participate and propose any research activity. It is also the fact that Ajith is a systems manager that makes it difficult for him to participate in the academic culture because the institution expects him to fulfill his primary commitment as a systems manager and research activity is seen as a distraction from the main responsibility of his job. As a result Ajith had to be given power in the form of coordinator for the Delhi institute by the EU-India programme, if he were to be recognised and supported by the institution in his participation in the programme.

The students and teachers located in different universities are very much linked with their own local cultures, administrative systems and teaching practices, which make the collaboration difficult. In the Computer Science Project, although both are higher educational institutions, the institutional culture of Delhi and Brighton, for instance, the way in which higher education is approached and delivered is different in both learning and teaching cultures and the administrative cultures of the institutions.

For the successful completion of the activity these institutional cultures and difference in work practices have to be recognised by the participants and negotiated. Some of the ways in which these aspects were taken into account were that of appointing Ajith as the Delhi University coordinator and giving him the status to participate in the collaborative activity and cultivating understanding of the teaching and learning culture through participant exchange visits. During the exchange visits Joe had delivered training courses and presented his study, which gave him an insight into the learning cultures of the students in the Delhi University and their knowledge areas. The Computer Science Project activity system can be represented as follows (Fig. 1a):
The collaborative activity system of the Computer Science Project be represented, it will have its own community, rules, and division of labour. Here the shared object is the object of the newly created collaborative activity, the subjects are Ajith and Joe, the rules that are agreed by the participants for the collaborative project. The community in this new environment will be that of the EU-India programme and community that the subjects bring into the study from their institutions. The division of labour again would be drawn from the community according to their needs.

Unlike the Computer Science Project, the participants from the Bankura, Dairy and Floriculture Projects come from entirely different working contexts. In the Bankura Project, Raja has a completely different work practice to that of Daniel.

If the activity system of Raja as director is to be mapped it would incorporate a number of activities but if his role in a particular project can be mapped, it would appear as represented below in the "Bankura Project" diagram (Fig.2).
Raja, in the research institution works with researchers to set up and carry out research activity. He can take up research activities either commissioned by an agency or set up one where necessary and bid for funding. The Institution expects all researchers to be research active in their respective areas of interest. Managing the research projects is to identify researchers from his institute to work on any commissioned projects and to monitor their progress. As the director he also has the responsibility of allocating funding for the projects.

Unlike Raja, Daniel’s activity system would be similar to Joe’s activity system. Since Daniel is a lecturer in a higher education institution his primary activity is to teach. He has to collaborate with other academics in the institution and designer to deliver his lectures. To arrive at this stage he would have gone through a number of activities. As a lecturer he is encouraged to carry out research but it is only a small part of his daily activity. As a result he can spend only a limited time on research which may not feed into his daily activity of teaching. Both participants can have the freedom to take up research activities without having to get permission from their respective institutions. However the participants’ different work commitments and work practices have impacted upon the Bankura Project in the form of the pace in which activities get dealt with. Raja can easily get impatient and frustrated, as his work practice is to carry out research and manage the project while Daniel’s work practice is to allocate a small portion of his time to the research project. This became apparent when Daniel had to take up extra responsibility. Consequently he could not even allocate the usual small portion of time to the research activity. Because of the fact that the
Bankura Project is not linked directly to his daily activity of teaching, Daniel had to put the research on hold until the workload could be reorganised. The difficulty that Daniel was facing with the additional responsibility was not communicated to Raja until I had mentioned it to him during one of my interview sessions as he had mentioned that he had not heard from Daniel and was not sure what was happening. Not only the different work practices (Amabile et al. 2001) but also the change in the circumstances of the participants' community affect the collaboration. Communicating the change in circumstances would help explain to participants who are working across distances like in this project, so they might understand and reorganise the activity. The exchange visits helped participants understand the work practices and institutional cultures of each other while regaining the momentum of the collaborative activity. The collaborative activity system of Raja and Daniel in the Bankura Project can be mapped as follows (Fig 2a):

In this collaborative activity system, the community and division of labour would come from the EU-India programme and the subjects' institutions. The shared objective that was represented in the interacting model would be the objective for the participants who are involved in this collaboration. The rules would be the rules the participants draw up for the activity. The mediating tools, in this activity are the emails and face-to-face meetings.

The participants in the Dairy Project come from similar working environments to those in the Bankura Project.
Kalyani, like Raja, comes from NISTADS. Unlike Raja, Kalyani is a researcher and carries out research activities either commissioned or of her own initiative. She has the freedom, like all the members of the research institute, to take up research activities on various areas. If she is working on a research project as a member of a team then she collaborates with other researchers in the institute. Her research outcomes feed directly into the policies under consideration or she can be commissioned by the policy makers to carry out research in a particular area. Leo, like Daniel, is a lecturer in a higher education institution – Denmark Technical University. His primary activity is to teach and he collaborates with other academics and researchers to deliver his lectures. His institution like the higher education institutions in the United Kingdom encourages and supports him to carry out research. Like the academics in the United Kingdom, Leo has to divide his time between teaching, research and administrative responsibilities. But in the Dairy Project, although participants come from different work environments with different work practices, Leo’s research data feeds directly into his teaching of action research. Unlike the other three cases discussed here, where the research activity does not feed directly into their teaching, Leo’s research activity is tightly tied up with his main responsibility of teaching making the collaborative activity easier and integrated within his daily activity. Consequently the research project is integrated into his daily activity making it easier to work on and giving the attention needed so as to match the activities of Kalyani. Leo being the overall coordinator for the Dairy Project is also the coordinator for the European group on the Dairy Project while Kalyani is the coordinator for the Indian group. Each participant in the Dairy Project starts out with carrying out research in their respective regions and
then extends it across cultures. This method has presented the participants an opportunity to own parts of the project and take responsibility for it. Consequently the collaboration has taken place in the conceptual and synthesis part of the research rather than at the field level as the designing of methodology for research across cultures is a conceptual activity. Ownership of the project is important for a successful completion of it (Kaye, A.R. 1993). Integration of the project into the daily activities of the academics and a sense of ownership over the activity have contributed to the fast progress made by the Dairy Project group. The activity system of the Dairy Project can be mapped as follows (Fig. 3a):

![Diagram](https://via.placeholder.com/150)

The collaborative activity system of the Dairy Project will have the community and division of labour as identified by the subjects' institutes who would be part of this collaboration and from the EU-India programme. The object is the shared object represented in the interacting activity systems model. The tools are emails and face-to-face meetings as proposed by the EU-India programme.

Participants in the Floriculture Project, like the Dairy and Bankura Projects, have different work practices and come from different institutional cultures. As discussed earlier, Kalyani, as a researcher, has the freedom to take up and carry out research activities as the institute expects all its researchers to do this. As part of research activity she collaborates with other researchers, if a team carries out the research, and she collaborates with policymakers as her study generally feeds directly into policy considerations. Like Kalyani, Daniel also has the freedom to take up and carry
out research as an academic. But the time allocated to research is shared with his primary responsibility of teaching in his institute.

\[ \text{Floriculture Project} \]
\[ \text{(Fig.4)} \]

In the Floriculture Project, as seen above diagram (Fig.4), Daniel was interested in multimedia archiving but Kalyani, who had carried out research on the sector as part of the research institutes activity, did not find any scope for her to carry out any further study on it. As a result there was a scenario where one of the participants was able to carry out a study while the other whose, main activity in her institute was to carry out research was not able to do so in this collaborative activity. Kalyani felt that there was not much for her as a researcher to gain from this collaboration. Consequently the project came to an end after six months of it being setup. The frustration faced by Kalyani was due to that fact that as a researcher she was used to actively participate in carrying field study and that is her primary commitment in the institute, while for Daniel, research was only a small part of his activities as an academic. Again the Floriculture Project like Bankura Project, is not integrated with the daily work schedule like that of Leo. Consequently the time that Daniel could allocate to Floriculture was limited and Kalyani without having any active research to carry out in the project, there was not much activity taking place around the project after Daniel’s’ visit to India to collect material for the study.
The activity system representation of the Floriculture Project will be different from that of all the other three projects, as here the subjects of the activity system will have different roles as we can see represented in the diagram below (Fig. 4a):

Like all the other three project’s activity systems, the Floriculture collaboration too would have had the community made up from the EU-India programme, and members from the subject’s institutes. The division of labour would have borne out of that community and the shared object of the interacting model would have been the object of this activity with emails and face-to-face meetings as mediating tools. However this was not the case. As we can see from the above diagram, the subject is Daniel who wanted to identify the actors and networks of the floriculture sector. In this object Kalyani’s personal goals is not represented and she is assigned the role of a mediator, so she is represented in the section of division of labour with EU-India coordinators, designers and technician identified from the community of this collaboration from the participants’ institutes and the EU-India programme. Daniel also provides the rules of the collaboration.
<table>
<thead>
<tr>
<th>Projects</th>
<th>Participants</th>
<th>Working context</th>
<th>Commitments</th>
<th>People</th>
<th>Institutional culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floriculture</td>
<td>Kalyani</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Daniel</td>
<td></td>
<td>X X X</td>
<td>X X</td>
<td>X</td>
</tr>
<tr>
<td>Computer</td>
<td>Ajith</td>
<td></td>
<td>X X X</td>
<td>X X</td>
<td>X</td>
</tr>
<tr>
<td>Science</td>
<td>Joe</td>
<td></td>
<td>X X X</td>
<td>X X</td>
<td>X</td>
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<td>Bankura</td>
<td>Raja</td>
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<td></td>
<td>Daniel</td>
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<tr>
<td>Dairy</td>
<td>Kalyani</td>
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<td></td>
<td>Leo</td>
<td></td>
<td>X X X</td>
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<td>X</td>
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</table>

PM- Policy making, AP- Academic publications, DINS- Development of the institute

A summary of the working context of the participants in the various projects is represented in the above table. The difference between the institutional cultures between the participants in the projects and their commitments in their respective working contexts are represented which drive the participants and their work practices. “Target audience” or the results of the study is also utilized differently by different groups of people (Easterby-Smith, M. and Malina, D. 1999). Participants from India feed their study results into policies to bring about a change and to try out the theory in practice while the European participants concentrate on publishing the study on peer reviewed journals. It is a knowledge construction exercise. Unlike the Anglo-Americans, Indians regard status in their community more than financial rewards (Frazee, V. 1998). As seen in the above table, Ajith in the Computer Science Project sees the outcome of the project activity would feed into the development of the institute, which he is in charge of. This would in turn increase his status in the University and the community. These differences in work practices and commitments have an impact on the collaboration and have to be recognised in order to set up and arrive at acceptable time schedules and approaches to the research activity.

### 8.3 Coordination

This section discusses the role of the EU-India programme’s coordination on setting up and supporting the progress of the four projects discussed in this thesis. Here the term “coordination” is used to indicate that a person or a group of people act as mediators among the programme participants to arrive at a mutually agreed situation. It is also seen as a mechanism to provide support to the on-going collaborative activity between the project participants.
During the course of the programme, the EU-India Cross-Cultural Innovation Network coordination centre was responsible for initiating and setting up the projects. The success of setting up and implementing teams relies heavily on those facilitate and coordinate the activity (Pauleen, D.J. and Yoong, P. 2001). The EU-India programme had a main coordinator, Ragu, who co-ordinated the entire programme and the European participants, while the Indian coordinator, Arun, coordinated the India participants and fed back to the main coordinator. However, any final decision rested with Ragu, the main coordinator. Sharples et al. (1993) identifies the "types of coordination strategies for writing which we shall call parallel, sequential and reciprocal" (p: 14). The type of coordination strategy employed for instance in the EU-India programme was similar to that of the reciprocal approach discussed by Sharples. Here the activities carried out by the participants in the programme were reported back to the coordination centre, which was commented on and fed back to the participants. However the coordination did not make any contribution towards the content of these collaborative activities. The coordination was at the level of practical issues such as creating a conducive environment to enable participants of the programme to identify possible collaborative projects, organising and supporting face-to-face meetings to enable participants to meet their partners in the collaborative projects and visit field site to collect data. This gave the participants in the programme an opportunity to carry out their research and personal goals. Since the EU-India programme was funding the various project activities, the participants had taken were obliged to report to the coordination centre on their progress on these activities.

The programme coordination has approached this role from points of view of "instructor", "facilitator" and "catalysts" to set up the four projects discussed here. The term "catalysts" is defined here as someone who plays a part in instigating a project, while facilitator is defined as providing a suitable environment for participants to identify and set up project activities and to lend the support required to sustain the collaboration once it was set up. "Instructor" is defined as someone who decides all the aspects of the project starting from the participants to the goals of the project and informing the participants accordingly. The participants are seen as passive actors in identifying and setting up the collaboration.

<table>
<thead>
<tr>
<th>Coordination</th>
<th>Computer Science Project</th>
<th>Bankura Project</th>
<th>Dairy Project</th>
<th>Floriculture Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalyst and facilitator</td>
<td>Facilitator</td>
<td>Facilitator</td>
<td>Instructor</td>
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</tbody>
</table>
8.3.1.1 Floriculture Project
As discussed earlier, Kalyani had introduced the Floriculture Project to the EU-India programme, as she had carried out a study on Floriculture as part of the research institute's activity. Daniel, who was interested in multimedia archiving, was interested in the floriculture sector. Hence the coordinators decided that Daniel and Kalyani should collaborate to build a multimedia CD-ROM as multimedia archives and a tool for information dissemination among flower growers in India. This outcome, from the coordinators' point of view, was seen to be feeding into the objectives of the EU-India programme. Consequently the coordinators identified the participants for this project when one of the participant, Kalyani, was not present at the meeting. The coordinators informed Kalyani of the decision, and the programme for Daniel to carry out field study was organised. The coordinators also assigned the roles in the project. Kalyani was assigned the role of mediator and translator for data collection for Daniel's multimedia knowledge archiving exercise. As a result, Kalyani in Floriculture Project did not feel that her interest was taken into account before proposing the project, although she did think it was a good idea to have a multimedia archive of the floriculture scenario to use as information dissemination tool.

In the Floriculture Project the coordinators took the role of instructors rather than facilitators. This may have caused the short life of the project as it failed to capture the needs, and interests of the participants.

Unlike the Floriculture Project that was set up by the EU-India coordination centre, Computer Science Project, Bankura Project and Dairy Project, was identified and set up by the participants themselves. This has led to the projects to be relevant to the participants' interests and goals.

8.3.1.2 Computer Science Project
In the Computer Science Project, Ragu had organised for Joe to visit Delhi University and give a presentation in the institution where Ajith was working. Ajith met Joe after the presentation and discovered that they were teaching similar courses in their respective universities and were interested in technology and education. Arun, the Indian coordinator had observed that Joe and Ajith were interested in similar areas and suggested that they design and set up a collaborative project. Ragu, the main coordinator, also agreed that Ajith and Joe should collaborate so that they could share knowledge and learn from each other. Following this, both Arun and Ragu supported the project by organizing and funding exchange visits for the participants. Here the coordinators were catalysts and facilitators for the setting up and the development of the Computer Science Project.
8.3.1.3 Bankura Project
In the Bankura Project, the participants Raja and Daniel met during one of Daniel's visits to India. The participants decided that they were both interested in recording the change brought about through the introduction of technology into a traditional artisan community. They decided to set up a project around this. The identified project had potential to address some of the EU-India programme's goals. Hence Arun, and Ragu, agreed and the project was set up. Since the setting up of the project, the coordinators have organised exchange visits for the participants to carry out field study and to plan and implement the project. Here the coordination is seen as facilitators.

8.3.1.4 Dairy Project
The participants in the Dairy Project, as in the case of Bankura Project, had met during a trip by a European researcher to India. Leo wanted to extend the methodology that he and the Italian participant had designed, to another country. He had this idea when the EU-India programme was set up. As a result he visited India to present his study and find participants who would be interested in collaborating on this. Ragu, organised Leo's visit to India to present his proposal. Following this presentation Kalyani came across the paper presented by Leo and expressed her interest in participating in the project. She also presented a proposal as to why and how the study could be carried out. Leo agreed to Kalyani joining the project among a number of other participants. He also agreed to the proposal presented by Kalyani. The coordinators supported and facilitated this project by organizing and funding exchange visits, field studies and planning meetings.

8.3.2 Synthesis
Coordination in a collaborative project is important especially when participants are working across distances or dispersed across the organization (Sharples et al. 1993). The coordinators of the "Coordination centre" of the EU-India programme have an important part to play in a project as big as the EU-India Cross-Cultural Innovation Network programme. Coordinators have played an important part in all four projects discussed here. An activity is not only mediated by tools, but also by other human beings and social relationships (Engestrom, Y. 1987). The Coordinators of the programme have acted as mediators to identify the various projects, participants and to sustain the collaborative activities. They have played the part of mediators in bringing like-minded people together in order to share knowledge and skills. Consequently, they have enabled the participants to identify projects, where participants can extend their knowledge. Furthermore they have provided support mechanisms such as face-to-face meetings, conferences and workshops to encourage and support collaboration. The role of the coordinators, from the EU-India programme's point of view,
was that of a mediator to bring about knowledge sharing through action research between academics and entrepreneurs in Europe and India.

The coordinators' knowledge about the participants' capabilities has been vital in approaching their role as mediators in the programme. The coordinators have met the participants in the programme, they have at one point or another worked with them or along side them (see Appendix 5). Hence this knowledge of the participants' ability played a part in the coordination centre's strategy to organising face-to-face meetings and providing conducive environments for participants to identify participants and projects for collaboration.

As seen above Fig.B depicts the activity system of the Programme, the participants of the various projects make up the community of the programme and the participants of the community also share the labour of achieving the programme's objectives. Division of labour encompasses the different people, such as the academics, researchers, administrative personals and technicians who are involved in contributing to achieving the objective of the programme. The actors are the coordinators who have facilitated and implemented the programme's activity. The mediating tool for the interaction and communication has been, English as the language (psychological tool), documents such as reports and publications and the telephones and online communication (physical tool) system as the media.
As depicted in above diagram (*Fig. 1b*), in the Computer Science Project, the participants Ajith and Joe became aware of their interests during a face-to-face meeting and the coordinators suggested that they work together. The coordinators acted as mediators and facilitators in identification and design of the project. They also organised and supported biannual face-to-face meetings, which gave the participants the opportunity to build momentum after a six months of limited progress via electronic interaction and communication. The coordinators also acted as facilitators to identify the project and its objective within the framework of the EU-India programme since their objective is that of the EU-India programme’s goal. The human mediation has played an important part in the development of the collaboration.

A similar type of coordination can be seen in the Bankura Project. The participants Daniel and Raja met and identified the project during one of the face-to-face meeting organised by the coordinators. In this project too, coordinators acted as facilitators and mediators to set up and carry out the Bankura Project.
As mapped in the above diagram (Fig.2b), the EU-India coordinators played an important mediating role for the progress of the collaborative project. This mediation was carried out in the shape of biannual face-to-face meeting facilitated by the coordinators, where Raja and Daniel could discuss the progress of their project and the next phase. As discussed earlier (in chapter 6), Raja had joined NISATDS around about the same time as the EU-India programme was set up neither of the coordinators, main coordinator or the Indian coordinator, had worked with or were familiar with Raja’s interests. Therefore, Raja was not involved in the EU-India programme until a later date. As the EU-India programme developed over the months, the coordinators and Raja came to know each other. It is during one of Daniel’s visits to India during the Floriculture Project that Daniel met Raja as the Director of the Research Institute, which was part of the EU-India programme.

As in the Bankura Project, the coordinators acted as facilitators and mediators in the Dairy Project. Unlike the other three case studies discussed here, Leo, the participant in the Dairy Project had an idea as to the project in which he wanted to be involved in. He had a blue print as to what area of study and what he would want to gain from the study although he was not sure whom he wanted to work with.
The coordination centre, aware of Leo’s interest organised, facilitated and mediated face-to-face meetings with potential participants. However Kalyani was not one of the participants introduced to Leo and the Dairy Project at the start of the interaction. But, when Kalyani eventually join the project the coordinators stepped in to assign her a role in the project. This interference and the move away from the facilitating and mediating roles created frustrations and unhappiness to Kalyani. During this period, Kalyani turned to me, during one of the interview sessions, to act as mediator between her and the main coordinator. This proved fruitful as I informed the discontent of Kalyani to the coordinator, who in turn accepted the need for the participants to define their roles and activity, stepped back and allowed Kalyani to identify her role in the Dairy Project. Once Kalyani had identified her position in the Dairy Project, the coordinators reverted back to the role of mediators and facilitators. They organised and facilitated face-to-face meetings to review and plan the phases of the project.

The involvement of the coordination centre and the coordinator in the Floriculture Project was different from their roles in the Computer Science, Bankura or the Dairy projects. The coordinators identified the project and the participants, in this case Daniel and Kalyani, for collaboration. They went as far to set up the project and outline the possible activities based on Daniel’s interests and the knowledge they assumed they had of Kalyani’s interests. However, coordination centre did not seek Kalyani’s comments on the collaborative activity, as a result failing to communicate with Kalyani to collect information about her personal goals. This led to a situation where Kalyani was involved in a project, which was not serving her interest or addressing her personal goals any more.
As a result Kalyani was frustrated and unhappy in it and the project came to an end after the first six months. Here the coordinators acted as instructors, at least in the case of Kalyani, rather than facilitators and mediators. They seem to have supported Daniel’s interest by organizing and facilitating face-to-face meetings and field visit for Daniel to carry out his study.

The coordinators’ involvement in the projects had varying impacts upon the projects discussed. The projects that have thrived have had the coordinators acting as mediators and facilitators unlike in Floriculture Project where they seem to have taken the role of instructors. Coordination opting to act as instructors could be based on the fact that the Floriculture Project was an ideal opportunity to mirror the objective of the EU-India programme’s activity. One of the objectives of the programme was to encourage networking between academics and entrepreneurs from Europe and India (see chapter 1) for collaboration in applied research in entrepreneurial innovations. The Floriculture Project was ideally placed with regards to addressing this objective. It provided ready access to subjects from a small-scale enterprise that had come into existence only recently and the ever-expanding networks of these new entrepreneurs, for the programme participants to carry out research. Therefore the coordinators wanted to use this existing scenario to carry out research activity to achieve aspects of the EU-India programme’s goals. Another reason for taking the role of instructor in the Floriculture Project could be attributed to the fact that this project was introduced at the very beginning of the EU-India programme when there was the pressure from the funding body on the progress of the programme. Consequently coordination was pushed to set up activities that was highly structured tightly aligned with the EU-India programme’s framework.

It is also important to note that even though the coordinators had knowledge about the participants’ area of interest, it proved unwise to decide and set up activities without consultations with the possible participants. As we can see in the Floriculture Project, Kalyani’s interest had been around floriculture but when she joined the EU-India programme she was hoping to extend and expand her research skills in other sectors. Hence, her personal goals were different to that assumed by the coordinators. It is the participants who can identify the richness of the project that they set up and the possibilities available in it to achieving their personal goals. In the Floriculture Project, the coordinators saw a dimension which was not of any interest to Kalyani and was not seen as a possibility for collaboration by her. Since it is the participants who are going to be working on the project, it is best that they identify the goal, objective, and the process of arriving at the object/project that they want to collaborate on.
The coordinators have also taken the role of instructors in assigning roles for some of the participants. As discussed before, in the Floriculture Project, Kalyani was expected to take the role of mediator between Daniel and the flower growers for the activity of knowledge archiving and the role of conceptualising the research. Again in the Dairy Project, the coordinators took a similar approach to assigning roles with regards to Kalyani's role in the project. Kalyani who had joined the Dairy Project through her own initiative, presenting proposals to Leo and the Italian participant and the EU-India coordinators, was informed by the coordinators that she would be playing the role of conceptualising for the research activity in India. Kalyani had wanted to participate in the Dairy Project to carry out research where she would be involved in the field study. The role assigned by the EU-India coordinators did not reflect this and Kalyani expressed her frustration to the coordinators. Following this, Kalyani herself redefined her role as an active participant in carrying out the field studies and informed the coordinators. The coordinators agreed to this new role of Kalyani in the Dairy Project. From that point forward, the coordinators took the role of facilitators by organising meetings and funding travel for the participants in the Dairy collaboration. Again like in the Floriculture Project, the coordinators have assumed her interests and the role that she would like to play in the Dairy Project. The coordinators have taken this decision, like as in the Floriculture Project, firstly without consultation with Kalyani and secondly at a meeting which Kalyani was not attending. As participants collaborating on projects to achieve their goals, it is important that the participants themselves with consultation with their group members decide the role of each participant to successfully complete the projects, while achieving their personal goals.

From the above two cases discussed, the coordinators have acted as instructors with regards to Kalyani's participation. This approach taken by the coordinators towards Kalyani could be due to the fact that, on the one hand, that Kalyani being the only female participant in the programme, the coordinators wanted to be sure that she was involved in a project and had a role in it. On the other hand it could also be that the coordinators might have felt that Kalyani being a researcher would have skills that could be better employed in conceptualising rather than actively participating in field study. This might have come from preconceived perceptions with regards to the relationship between active/passive role and gender and ethnicity. However, since there was only one female participant in these cases taken for study, it is difficult to conclude whether it was an issue of roles, gender and ethnicity or a just a misjudgment on the part of the coordinators. Nevertheless, it could be concluded that coordinators in programmes, such as the EU-India programme, need to recognise the importance of consultation with the participants in relation to their interests and their roles in a project if the coordinators decide to set up an activity, although it would be best if the participants
themselves identified the projects and their roles in them. This would give the participants the opportunity to identify their personal goals and roles within the projects.

8.4 Interaction and Communication

This section discusses the role of interaction and communication in identification and progress of the four projects presented in this thesis. The use of face-to-face meetings (8.4.1) and the technology (8.4.2) for interaction and communication in these projects is addressed. Section 8.4.3 presents the synthesis of interaction and communication with Activity Theory.

Interaction and communication are a vital component for collaboration in any context (Sharples et al. 1993). The importance of communication becomes even greater when collaborative activity is taking place across distances and cultures (Easterby-Smith, M. and Malina, D. 1999). Unlike collaborative activity that takes place between participants where they are able to see each other's activity, participants of collaboration at a distance have to keep the others informed of their activity and their progress. According to Kaye (1993), one of the important factors "is the importance of mixing face-to-face communication with other channels. There is evidence that the lack of immediate feedback in asynchronous conferencing and in one to one email exchanges can more easily lead to coordination problems and protracted decision making than is the case for face-to-face meetings" (p. 61). The technologies used by the participants were asynchronous, such as "TeamRooms", mailing list and emails. These asynchronous tools were seen to be the acceptable technologies based on cost, accessibility and the fact that it gave the users time to reflect on the composition and responses to messages (Kaye, A.R. 1993). To enable collaboration between the dispersed participants in the EU-India programme, the programme incorporated face-to-face meetings, which were either workshops or informal meetings along with online communication systems. In the EU-India programme, English is the agreed language of interactions and communication.

8.4.1 Face-to-face meetings

This section presents the formal and informal face-to-face meetings organised by the EU-India programme to support the collaboration in the four cases discussed.

Face-to-face meetings take place when participants have travelled to one or the other participants' place of work and participated in workshops or attended meetings. Here the participants were physically present and participating in the collaboration or the workshops. The EU-India
programme organised workshops, conference meetings and informal meetings between the participants to enable the participants to discuss their collaborative projects.

8.4.1.1 Floriculture Project

<table>
<thead>
<tr>
<th>Interaction and Communication</th>
<th>Floriculture Project</th>
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<tbody>
<tr>
<td>Face-to-face meetings</td>
<td>Kalyani and Leo</td>
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<td></td>
<td>Workshop and conference</td>
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<td></td>
<td>Brighton September 1999</td>
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<td></td>
<td>Wales September 1999</td>
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<td></td>
<td>Informal meeting</td>
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<td>Delhi February 2000</td>
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Participants, Daniel and Kalyani, from the Floriculture Project had met at the workshop in Brighton in September 1999. At this workshop Kalyani presented the study that she had carried out in the Floriculture sector. The workshop in Brighton was followed by a workshop in Wales. In this Wales workshop, Daniel presented the multimedia knowledge archiving he had carried out for the aviation industry. Kalyani did not attend this workshop as she was in Aachen Germany seeking possible collaboration with academics there on technology and the textile industry. During the workshop in Wales, the coordination centre decided to set up the Floriculture Project, which would be collaboration between Daniel and Kalyani. It was also decided that Kalyani would take Daniel to meet the farmers and traders. Kalyani was not consulted about this collaboration.

As mentioned earlier, Kalyani knew the actors and the networks in the floriculture sectors so when Daniel had visited Delhi in February 2000, she took him to interview the flower sellers in the market. She also took Daniel to visit a few of the fields where farmers had moved from traditional crops to growing flowers. At both locations, market and the fields Daniel had interviewed the actors in the floriculture sector. Since the farmers were speaking in their mother tongue, Hindi, Kalyani had acted as the mediator and translator for Daniel’s interviews. Daniel took the footage to his institute in Wales to be edited and designed into a multimedia archive but due to the poor quality of the footage and the lack of resources to transcribe, translate and edit the material, the activity could not be taken any further. In the Floriculture Project, Kalyani did not feel that there was any scope for her to extend or carry out research in this sector. As a result the project had come to an end after six months of it being set up.
8.4.1.2 Computer Science Project

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<thead>
<tr>
<th>Interaction and Communication</th>
<th>Ajith and Joe</th>
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<tbody>
<tr>
<td>Face-to-face meetings</td>
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<tr>
<td>Workshops and conferences</td>
<td>Delhi February 2000</td>
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<td>Informal meetings</td>
<td>Delhi February 2000</td>
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<td></td>
<td>Brighton September 2000</td>
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<td>Delhi February 2001</td>
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The participants in the Computer Science Project met face-to-face at least every six months during the project. Joe visited India in February 2000 and ran a training course for the postgraduate students at the institute where Ajith was working. The EU-India programme organised this workshop. During this workshop he also presented the self-organizing system which he had developed as part of his Ph.D. study. Ajith, who had attended the workshop and the training programme, met up with Joe after the meeting. During this informal meeting Joe and Ajith realized that they had similar interests and wanted to explore the possibilities of working together. By the end of the visit Ajith and Joe had decided on the Computer Science Project. It was decided that Joe would design a web site to host the web base resource and Ajith would comment and collaborate on the design.

In the next six months, Ajith and Joe were trying to set up a web site where they could upload resources for the postgraduate students as part of the Computer Science Project. Joe designed a prototype of the web site and uploaded it on to his university allocated server space. Ajith was informed of the web site through email and was asked for comments and suggestion. According to Joe the comments that he received from Ajith over the emails on the web site were positive and brief. Following this, over the next six months the project hit an inactive period except for when the participants decided to write a paper for a conference in England. Ajith wrote the abstract for the paper and emailed it to Joe for contribution. Joe made his contribution by writing a draft paper with points that he wanted incorporated in the paper and emailed it back to Ajith for revision and expansion. Following this Ajith wrote the final version of the paper and submitted to the conference panel. In September 2000, Ajith presented this paper at the conference in Manchester England.

After attending this conference in September 2000, Ajith met up with Joe to lay down a clearer plan as to the development of the project. They took the opportunity to identify the issues behind the slow progress of the project. It was decided a mediator or a facilitator for the Computer Science
Project would help to move the project at a quicker pace. Consequently, I, the researcher on the EU-India programme, was asked to act as the mediator and project manager to support and encourage the collaborative activity. However, this did not make much difference as I did not get any response from Ajith to my emails inquiries on the progress of the project. I later, during my visit to India in February 2001, discovered that the lack of response to my queries and Joe's emails was due to the fact that the emails system in Ajith's institutions was experiencing a fault. We, Joe and I in Brighton were not aware of this until this meeting in India. Consequently, following the meeting in September 2000, the project stagnated for another six months until Joe visited Delhi in February 2001. In this February meeting, as part of the initial plan to create a collaborative activity between the postgraduate students of Brighton and Delhi, the participants decided to apply for funding to appoint support staff for the project. This decision was made because the academics were finding it difficult to work on the project with their daily commitments in their respective institutes. Ajith also took this opportunity to discuss online evaluation and monitoring in the educational environment. Ajith was planning to develop a self-learning system for his students in Delhi and Joe who had experience in using electronic systems for learning and teaching was able to answer some of the questions.

8.4.1.3 Bankura Project

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<tr>
<th>Bankura Project</th>
<th>Raja and Daniel</th>
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<tbody>
<tr>
<td><strong>Interaction and Communication</strong></td>
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<tr>
<td>Face-to-face meetings</td>
<td>✤ Informal meetings</td>
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<td>✤ Delhi December 1999</td>
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<td></td>
<td>✤ Delhi February 2000</td>
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<td></td>
<td>✤ Brighton June 2000</td>
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<td>✤ Delhi November 2000</td>
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The participants in the Bankura Project had met during Daniel's visit to Delhi in December 1999. Following this Daniel was in Delhi running a training programme in multimedia design to postgraduate students at the University of Delhi in February 2000. It was during this visit that Daniel came to know about the Bankura Project, through Raja. He was interested in the project, as it would give the opportunity to carry out multimedia knowledge archiving in a different context to that he had previously worked in. Raja, during this meeting, informed Daniel that the institution was trying to identify the reasons why the artisans in the Bankura region were not taking up the technology offered by the institution. The institution was hoping to introduce technology again in the region and to help artisans preserve their skills. From the commercial point of view, Raja wanted to help the artisans market the brass products from the Bankura region and record the
change that would take place with technology. Daniel wanted to archive the skills of the artisans and to record the change brought about by the introduction of technology. As a result the participants informed the coordination centre of their joint interest and desire to collaborate on this project.

Three months following the meeting in Delhi, Raja visited Brighton to meet Daniel. During this visit Raja was keen on setting up the website to market the Bankura brass products. Since Daniel is knowledgeable in web design and online commerce, Raja requested him to design and set up the website for commercial purpose. Consequently, Daniel and Raja registered the domain name Dokra.com. Raja also discussed with Daniel the need for the website to have a historical background of the brass work in the Bankura region making the commercial site also an information archive. Three months after this meeting, Daniel visited Delhi in December 2000 to discuss the possibilities of carrying out field study for his multimedia archiving exercise. However, Raja had already organised for Daniel to visit a village in the Bankura region to interview and observe the artisans at work. This meeting was very fruitful as Daniel got good footage for his study and for the Bankura website. Daniel and Raja needed more funding if they were to carry on their activity in the Bankura Project. To translate and edit the collected multimedia material they wanted to employ support staff. Furthermore, the participants also needed funding to visit field sites to carry out further study. The EU-India programme's, that provided the financial support, could not continue to do so as the programme did not have the means and the programme was nearing its completion. Hence, during the December 2000 meeting, Raja and Daniel decided to submit a bid to the Arts and Humanities Body in the UK in order to secure funding to extend the collaborative activity on the Bankura Project. It was during this visit that Daniel had to cut visit short and return to the UK because of a long-term illness of his colleague.

Following this meeting, in December 2000, the progress of the project slowed down. This was due to the fact that Daniel was dealing with additional responsibilities in his daily activity while preparing the bid for funding. This encroached into his time, pushing the research to the background. Raja was not aware of the tight schedule of Daniel although he was aware that Daniel was preparing the bid for funding. Raja became aware of Daniel’s additional responsibility and its impact on the collaboration when I, as a researcher, informed him during an interview session in Delhi in February 2001. Since then the participants were successful in securing funding which helped them appoint support staff and fund travel for field studies. As a result the Dokra.com website
site has become active with photographs and history of the brass artisans of the Bankura region. They also expect to host multimedia clips of the brass workers on this web site in the near future.

8.4.1.4 Dairy Project

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<tr>
<th>Dairy Project</th>
<th>Kalyani and Leo</th>
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<tbody>
<tr>
<td>Workshop and conference</td>
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<td>March 1999</td>
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<td>Aachen March 2000 (as part of the EU-India programme. Not attended by Kalyani)</td>
<td></td>
</tr>
<tr>
<td>Ahmedabad December 2000</td>
<td></td>
</tr>
<tr>
<td>Bologna May 2001</td>
<td></td>
</tr>
<tr>
<td>Delhi February 2002</td>
<td></td>
</tr>
<tr>
<td>Informal meeting</td>
<td></td>
</tr>
<tr>
<td>November 1999</td>
<td></td>
</tr>
</tbody>
</table>

Unlike other projects identified in the EU-India programme, the Dairy Project has three institutes from India and Two from Europe collaborating on the project. The participants that I have taken up for study are the coordinators of the Dairy Projects in India and Europe. In the Dairy Project the participants met and discussed the possibility of collaborating at the start of the EU-India programme in 1999 but Kalyani was not part of the group at the time of discussion. In November 1999 Kalyani came across the paper written by Leo and the Italian participant, “Field to Table”, which was presented at one of the meetings held during Leo’s visit to India. Kalyani got interested in the project, and expressed her interest to the coordination centre and to Leo on wanting to participate in the project.

In the following months Kalyani presented her proposal for participating in the project and joined the activities. The format of the Dairy Project's collaborative activity was decided at a EU-India programme’s meeting in Aachen, Germany in March 2000, which was attended by the European partners of the Dairy Project but not by Kalyani or any of the project's Indian participants. Kalyani was not happy with the format that identified her as the person to carry out the conceptualizing the research activities at the Indian side. She wanted to play an active role of carrying out field studies. The coordinators Arun and Ragu were informed of this and the coordination centre redesigned the formats, taking into account the issues raised by Kalyani and from that time forward the participants carried out their activities based on it. The first stage was to map the structures of dairy farming in Punjab and Gujarat. The participants met again in Bologna in May 2001 to present the initial study, which was to present the structures of the Dairy industries in India and Europe and to plan the next stage of the activities. During the February 2002 workshop, the participants discussed ways of
developing the methodology designed by the European participants- Leo and the Italian participant.
All of the major decisions in the project were made during these face-to-face meetings. The project had been steadily progressing to date.

The above four case studies suggest that face-to-face meetings have played an important role in bringing participants with similar interests and goals together to identify projects for collaboration. Furthermore it has enabled participants to plan and execute their collaborative activities to achieve their personal goals and their project's objectives even though they are collaborating over geographical distance. As we saw in Floriculture and Dairy Projects that when participants were not present at the meetings and decisions were made with regards to projects, roles and objectives on the behalf of the absent participant, the collaboration on those projects encountered difficulties or delay. Hence it is important that participants involved in the projects are present when decisions are taken. With regards to progress of the projects, the participants have relied on face-to-face meetings to plan and review their progress on their activities. Dairy and Bankura Projects are good examples of dispersed participants planning and working around face-to-face meetings. In these two projects the entire decisions and revisions were undertaken during face-to-face meetings and enabled the participants to pursue their activities without much difficulty.

The participants in the Computer Science Project, with regards to planning and revising, took a similar approach to that taken by participants of Bankura and Dairy Projects. However, unlike Bankura and Dairy Projects, the Computer Science Project was about setting up collaborations between students and building learning resources and technologies. Since this collaboration was at the developmental level, where participants were designing a web site for the project activity and student collaboration, the participants needed to interact and communicate even when dispersed. However, among a number of other factors, difference in technological preference had affected the interaction and communication between these participants. Therefore, the participants in the Computer Science Project had to rely heavily on face-to-face meetings not only to plan and revise their project objectives but also to work on the developmental level of the activity.

Face-to-face meetings have provided the opportunity for the participants in the above projects to initiate and carry out their collaborative activity to pursue their personal goals and the projects' objectives.
8.4.2 Technology for interaction and communication
This section discusses the role of technology for interaction and communication in the four case studies.

Studies on using computer-mediated tools for collaboration show that multimode of communication enhance the interaction and communication for effective collaboration. Taking these finding into account, various means of communication tools, such as TeamRoom, email and mailing list, are incorporated to support the collaboration between the dispersed participants in the EU-India programme. Since India has a low bandwidth and accessibility problem, it was decided that text-based communication tools would be the most suitable means of online communication to use. Furthermore the time difference between Europe and India dictated choosing asynchronous communication tools. As asynchronous communication would not require the participants to be logged into their communication systems at the same time to interact and communicate, the time difference would not be affect the participation.

Since academics were going to work from a distance and on various projects, a public and private communication domains were provided. Informal communication was seen as vital for setting up and maintaining collaboration and the private domains were seen to provide an environment for this informal communication (Kraut et al 1987; 1990). As a result the following communication tools were provided through the EU-India programme's web site.

Below I discuss the type of communication technology that was available for the participants in each project and the participants' preference for a particular medium over the another.
8.4.2.1 Floriculture Project

The table below presents the communication technology that was available to Kalyani and Daniel and the use of these technologies in their daily institutional activities.

<table>
<thead>
<tr>
<th>Interaction and communication</th>
<th>Kalyani</th>
<th>Daniel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type and Access</strong></td>
<td>Email</td>
<td>Email</td>
</tr>
<tr>
<td></td>
<td>Mailing list</td>
<td>Mailing list</td>
</tr>
<tr>
<td></td>
<td>TeamRoom</td>
<td>TeamRoom</td>
</tr>
<tr>
<td></td>
<td>Telephone</td>
<td>Telephone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use</strong></td>
<td>Telephones - most of the communication is carried out through this medium. Does not have international access.</td>
<td>Telephones - rarely uses this medium. Does not have international access (outgoing).</td>
</tr>
<tr>
<td></td>
<td>On-line communication - only essential communication is carried out through this medium</td>
<td>On-line communication - most of the communication is carried out through this medium</td>
</tr>
</tbody>
</table>

The participants from the Floriculture Project had access to email, mailing list, to a “TeamRoom” and telephones. Daniel has an email account with his institution in Wales at the time when EU-India programme came into existence. He uses the email and newsgroups set up for various courses to communicate and interact with his undergraduate and postgraduate students. Almost all of his communication activities within the university and outside were conducted via emails. Even though Daniel has access to a telephone he rarely uses it to communicate even within his university. Furthermore he does not have access to an international line from his telephone. Kalyani had a Yahoo account when she joined the EU-India programme. NISTADS, where Kalyani is a senior research, was in the process of setting up the institution’s email and web servers. Later Kalyani had an institution email address. She uses email as a record of things discussed and agreed upon. If she wanted to get in touch with one of her colleagues in the institution her first choice of communication tool would be the telephone. Only if she cannot get the person on the phone, then she would send them an email. She saw email as a formal means of communication and the written form is seen as binding unlike the view of the Europeans. Unlike Daniel, Kalyani uses the telephone to communicate within and out side her institution. However, like Daniel Kalyani does not have access to an international line via her office telephone.

A “TeamRoom”, was set up with password access for the participants in the Floriculture Project. The TeamRoom was to provide the environment for informal discussion and communication in a private space since previous research had shown that informal meetings to be important for setting up and maintain collaboration (Kraut et al. 1987; 1990). It was envisaged that it would be an ideal
place for Daniel to upload his material and Kalyani to download them. The participants were informed of the “TeamRoom” but neither of them used it. It was difficult to identify the reasons as the project came to an end after the first six months.

The mailing list was set up and the participants were informed. As discussed in Dairy Project, Kalyani has not joined the list while as discussed in the Bankura Project Daniel joined the list as soon as it was available.

8.4.2.2 Computer Science Project
The communication technology that was available to Ajith and Joe are the use these technologies within their respective institutions is present in the table below.

<table>
<thead>
<tr>
<th>Interaction and communication Technology for communication</th>
<th>Ajith</th>
<th>Joe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type and Access</td>
<td>Email</td>
<td>Email</td>
</tr>
<tr>
<td></td>
<td>Mailing list</td>
<td>Mailing list</td>
</tr>
<tr>
<td></td>
<td>TeamRoom</td>
<td>TeamRoom</td>
</tr>
<tr>
<td></td>
<td>Telephone</td>
<td>Telephone</td>
</tr>
<tr>
<td>Use</td>
<td>Telephones- most of the communication is carried out through this medium. Does not have International access (outgoing).</td>
<td>Telephones- - rarely uses this medium. Does not have International access (outgoing).</td>
</tr>
<tr>
<td></td>
<td>On-line communication – only essential communication is carried out through this medium</td>
<td>On-line communication- most of the communication is carried out through this medium</td>
</tr>
</tbody>
</table>

Both participants have access to emails, mailing list, and the TeamRoom that was set up for the Computer Science Project from the computer on their desks. They also have on their desks their own telephones with their own numbers. Ajith uses the telephones for almost all of his communication activities within and outside the university although he has a Yahoo email account and a university account. He had to use the Yahoo account because when he joined the institute the computer network in the institute was at its most basic. Ajith started setting up the computer networks in the University and had a University email account a year after the project was set up. Joe has a university email account as well as his own web space on the university web server where he uploads his lecture notes for the graduate and postgraduate courses. As a result he communicates mainly through emails and the news groups which are dedicated to students from different courses. When it comes to using the telephone, Joe very rarely uses it for interaction and communication even within the university. The telephone line he has access to in the university does not provide international access. Hence it is not used as a main means of communication.
According to Ajith, he prefers to use the telephone to emails. He sees emails as a formal means of communication and mostly emails are used by him as a way of keeping records of meetings or issues that have been discussed and confirmed. When an email is sent to Ajith, the response can vary from no response to a delayed one. The delayed response can be between a week and a few weeks. Unlike Ajith, Joe uses and views email communication as an informal means of communication. It shows that use of emails is not similar to that of the academics in England although Ajith is a technology expert.

A “TeamRoom”, similar to that provided for the Floriculture Project’s, was set up to facilitate the interaction between Ajith and Joe, who were collaborating to set up a collaborative project for their postgraduate students on the subject area of Computer Networking. The “TeamRoom” was set up with password access to the participants of the project. Participants were informed of this discussion environment but neither of them used it. I as a researcher wrote a joint paper with Joe and Ajith. During the process of this collaborative activity, I had written the main part of the paper and sent it over via email and the “TeamRoom” for comments and input from Joe and Ajith. Joe responded over the email with additional points and issues for the paper while there was no response from Ajith. This was picked up when I met Ajith during one of his visits to Brighton and learnt that he thought it was not in his place to comment or question any of the ideas or issues in the paper, where I had put so much effort into. He said that he would have given his comments if I had spoken to him. This might be because of the fact that commenting on a written document would make it formal where the written words are seen to binding. So like the email communication, Ajith also saw the “TeamRoom” environment as a formal process of writing. Joe, on the other hand expressed his reluctance to use a system where he has to go and pick up any of the interaction and communication that was taking place in that environment. He would have preferred a system, which would deliver all the communications to his inbox of his email programme. Since he was also dealing with a number of other systems as part of his teaching and daily activity, this “TeamRoom” environment was an additional task to perform to carry out the collaboration.

The participants also had access to the EU-India programme mailing list. This is a public domain, where the participants could post messages that would of interest to all. Joe joined the list as soon as it was set up and announced during the September 1999 conference at Brighton. Ajith was informed about the list but has not joined it to this date, although the coordinators have advised all participants to do so. This might be due to fact that it is a public forum. Ajith also does not subscribe to any of the academic mailing lists so the culture of seeking information over mailing
lists is not part of his academic activity. Joe, in contrast subscribes to various mailing lists which keep changing according to the traffic on the list and the subject area that he is interested in. Through lists, Joe expects to learn about conferences, call for papers for journals and discussions on current issues of technology and teaching.

8.4.2.3 Bankura Project

Raja and Daniel's access to the various technologies for communication and the use of these technologies in their working context is presented in the table below.

<table>
<thead>
<tr>
<th>Interaction and communication technology</th>
<th>Type and Access</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raja</td>
<td>Email, Mailing list, Telephone</td>
<td>Telephones - most of the communication is carried out through this medium. Has international access. On-line communication - only essential communication is carried out through this medium</td>
</tr>
<tr>
<td>Daniel</td>
<td>Email, Mailing list, Telephone</td>
<td>Telephones - rarely uses this medium. Does not have international access. (outgoing) On-line communication - most of the communication is carried out through this medium</td>
</tr>
</tbody>
</table>

In the Bankura Project, both participants used email to interact and communicate. At the start of the collaboration Raja had a Yahoo email account but later obtained an account with his institution. When EU-India programme was launched NISTADS, where Raja is the Director, was in the process of setting up its computer networks and servers for email and the web site. As a result there were limited computers and access to the Internet. However, later access became easier and more reliable. As the Director of the institution, Raja has access to his own internet-connected computer. As discussed in the Floriculture Project, Daniel uses emails to interact and communicate with his colleague and students in his institute along with colleagues and friends outside the institution. He also uses newsgroups in his institution to discuss and communicate with his students. The use of telephones is rare compared to the use of emails. However, like Joe, Daniel does not have access to an international telephone line. On the other hand Raja uses the telephone to communicate and interact within his institute and outside. It is important to point out that, unlike Daniel Raja has access to an international telephone line. Since he is the Director, staff members tend to have face-to-face meetings in his office to discuss issues.

Participants in this project, like everyone in the EU-India programme had access to the mailing list. When the mailing list was set up and the participants were informed, one of the participants’ from
Raja’s institution requested that his name and the Director’s should be added to the list. I responded to this request with instructions as to how to join the mailing list and explained that it would be better if they did it themselves. Neither of them joined the list. But Daniel joined the list the same day he was informed of the availability of such a list. He also subscribes to various mailing lists, which disseminate information and discuss issues relating to his field of expertise.

### 8.4.2.4 Dairy Project

The table below presents the communication technologies that were available to Kalyani and Leo and the use of these technologies by these participants in their respective working contexts.

<table>
<thead>
<tr>
<th>Engagement and Access</th>
<th>Kalyani</th>
<th>Leo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Email</td>
<td>Email</td>
</tr>
<tr>
<td></td>
<td>Mailing list</td>
<td>Mailing list</td>
</tr>
<tr>
<td></td>
<td>Telephone</td>
<td>Telephone</td>
</tr>
</tbody>
</table>

The Participants in the Dairy Project had access to email system, mailing lists and telephones for their interaction and communication. Leo from DTU uses email to communicate with his students and colleagues within and friends outside of the institute. He views the use of email, in the Dairy Project, as a tool to fine tune ideas and issues discussed during face-to-face meetings. It is also seen as an archive of the ideas raised and agreed upon. He would use the telephone only if there was something personal and sensitive that he would want to discuss or communicate. As discussed in the Floriculture Project, Kalyani had access to emails and telephones. Kalyani sees emails as a formal means of communication and generally emails someone in the institute only if they are unavailable on the telephone. However, neither of the participants had access to an international telephone line. Like other participants in the EU-India programme, Leo and Kalyani were also informed of the mailing list as soon as it was setup. Leo joined the list immediately but Kalyani did not join at all.

### 8.4.3 Synthesis

The participants of the projects discussed here use different communication tools to interact and communicate in their daily activities. Differences in preference towards the use of one technology over another would affect the collaboration and it needs to be addressed. These preferences seem to
have been carried into the collaborative activity at a distance in the EU-India programme and the various projects. As a result there have been communication breakdowns and slow progress of the projects.

In the Computer Science Project the participants seem to use different tools to interact and communicate in their daily activity. This difference in work patterns in relation to using computers in daily activity may have affected the use of technology for communication (Mitra et al. 1999). Ajith prefers to meet students face-to-face or use the telephone to interact with his students and his colleagues while Joe uses the newsgroup, email and meetings. Joe uses the telephones very rarely while he uses the electronic media extensively whereas Ajith carries out most of his activities through face-to-face meetings and telephone calls. This difference in the preference towards a communication media has impacted upon the Computer Science Project which had to rely heavily on the electronic media as it was being conducted across distance, between in India and England, and cost being an issue to use telephones. As a result most of the movement on the project’s progress seem to have taken place during face-to-face meeting which was once every six months. Since this project was expected to be collaborative where continuous interaction and decisions have to be made for the project to be developed, the lack of communication due to difference in preference on the mode of communication created difficulty along the way. The slowness in responding to email communications also affected the collaboration (Kaye, A.R. 1993). Joe was frustrated at times with the slow response of Ajith.
Like the Computer Science Project, the participants in the Bankura Project as well have had to rely on electronic communication for their collaborative activity. But unlike the Computer Science Project, the Bankura Project participants had less need for interaction and communication while they were working in their own environment because of the nature of the activity. Raja was not expected to contribute to the designing and recording of the multimedia archiving which was what Daniel was involved in once he had collected the material. But Raja wanted to be informed of the progress on the web site that Daniel was designing for the Bankura Project. The material for the web site, text as well as multimedia clips, was to come out of the fieldwork carried out by Daniel during his visit to India.

Raja uses the telephone and face-to-face meetings in his daily activity where as Daniel uses the electronic media and face-to-face meetings to interact and communicate. The use of computer was not part of Raja’s daily activity, unlike Daniel. Hence the use of email for the collaborative project was also different (Mitra et al. 1999). Here too as in the Computer Science Project important decisions were taken during face-to-face meetings. The same can be seen in the Dairy Project.
The Dairy Project, like in the Computer Science and Bankura Projects had to rely on electronic media to interact and communicate. However the participants from this project, had different preferences about the medium of communication. Kalyani uses the telephone and face-to-face meetings to interact and communicate with her colleagues and research subjects, while Leo uses the electronic medium with his colleagues and students. During the Dairy Project most major decisions and progress were made during face-to-face meetings. Since the project was set up in a manner where the Indian participants were carrying out their research in India and the Europeans were working on their side of development of the methodology, the collaboration was at the level of completion of each stage. Collaboration was taking place at the conceptual, theoretical and practical level rather than at the actual research activity. As a result the limited communication between the Indian and European participants did not have any major impact on the progress of the project. Face-to-face meetings have been the main contact point where decision were made and emails were used to refine and reiterate what had been discussed during the meetings.
In the Floriculture Project, Daniel, as discussed in Bankura Project, prefers electronic media to interact and communicate in his daily activities while Kalyani, as discussed in the Dairy Project, prefers to use the telephone and face-to-face meetings.

The Floriculture Project was set up during a face-to-face meeting and through email interaction visits to the fields were arranged and the data was collected. Following the return of Daniel to Wales there was no further communication and the project came to an end.

From the above four case studies, it can be said that the Indian participants prefer to use the telephones and face-to-face meetings for interaction and communication while the European participants prefer face-to-face and the electronic media. This might be because the Indians who are identified as high-context culture (Kakabadse et al. 2001) find the text based communication tools limiting in providing all the information that is needed to communicate an idea while telephones are relatively accommodating to this.

Face-to-face meetings as opposed to computer mediated communication media, are rich in the information that is being communicated making it easier to carry out certain tasks (Barkhi et al 1999). The participants in the case studies discussed here have relied on face-to-face meetings to identify, design and review the projects and its goals. Text based mails, whenever used, have acted as vehicles to refine and reiterate what has been discussed during face-to-face meetings.
Michael Cole explains that “all tools embody simultaneously a theory of the activity they have been designed to fulfill and the theory of the human beings who must carry out the activity. Tools vary from highly specialized to relatively general with respect to the tasks they can fulfill” (Cole, M. 1988, p. 148). And here the electronic mail has been designed as a tool to carry out communication using text. Vygotsky, in his argument on mediating tools differentiates between tools and signs. The signs are seen as the psychological tools and “the following can serve as examples of psychological tools and their complex systems: language; various systems for counting; mnemonic techniques; algebraic symbols systems; works of art; writing; schemes, diagrams, maps, and mechanical drawings; all sorts of conventional signs and so on” (1981a p.137 in Wertsch 1985 p:79). Language is seen as one of the cultural tools that are available to human beings to mediate activity.

Text based electronic media like email, rely on written language. Here the written language is the psychological tool. The physical tool, the email software, is designed to use Roman letters as the sign system. This allows the participants to use languages which use roman letters, although in recent times software using non-Roman font is available. Text based electronic communication tools are available in India and has been introduced into all of the leading Universities and Research centres. However the Indian participants of the EU-India programme from the Universities and research centres were reluctant to use this medium of communication, although the participants agreed on the language of communication in the EU-India programme to be English and email as the medium of interaction, when they joined the programme.

For Indians, in this project, English is a second language while Hindi is their mother tongue. Hindi’s writing symbols cannot be mapped using Roman letters as they vastly differ. Since the email software and the keyboards are of roman letters the Indian participants have to undergo difficult cognitive processes if they were to write and read in Hindi using roman letters. As a result writing an email in Hindi can entail a lot of effort. This might be one of the reasons why the Indian participants do not use emails for communication within their institutions. They seem to use emails as a last resort only when they are unable to get in touch with the person they wanted to speak to, either face-to-face or via the telephone. However, all of the Indian participants are fluent speakers of English so it would appear that they would not have any qualms about using emails to communicate with their colleagues who are also competent in the second language. However, it is not so as throughout history, from the colonial times, English has been used in India for legal and official purposes. Consequently, communicating via email in English, especially written English,
the Indian participants view it as formal means of communication and legally binding. It is also important to note that English has been localized in India to reflect the local culture and ethos (Kachru, B B 1983). Hence when it comes to writing to an international audience the participants have to revert to the 'international' variety which in turns makes it formal and official.

Unlike the Indian participants, the view and use of emails by the European participants is less formal. The European participants in the EU-India programme use emails easily, although they are non-native English speakers as they use roman letters for their native languages. The participants who are native English speakers have created a culture where emails are seen as informal means of communication. The participants from the United Kingdom in the EU-India programme use emails as an informal means of communication where the interchange can be short as a single word. The composition of the message is informal and is hybrid - spoken and written - in its nature.

The use of emails among Indian participants may change as the tool gets modified to incorporate Indian writing systems. As Activity Theory explains, the mediating tools that actors use to carry out an activity have been among the community for a long period of time and have been integrated into their culture (Engestrom, Y. 1987; Cole, M et al. 1997). Hence the use of emails by the Indian participants may not only increase but also be redefined and redesigned to suite and support their needs.

The above four cases also suggest that certain strategies to collaboration at a distance, has enabled participants from two of the projects to partially overcome the difficulties faced with regards to difference in preference of technology for communication. In the Dairy Project the tasks were divided between the participants in a manner that when the participants were dispersed there was not much need for the participants to use the online technology for interaction and communication and the progress of the collaboration. Online technology was used as a means to disseminate information and fine-tune the activity. It is important to note it is not just the division of task, it is the nature of the tasks. In the Dairy Project the participants took up their research studies in their respective countries using their own approaches and these studies were then discussed during face-to-face meetings. Here none of the participants' activities depended on the others in the immediate sense that would require frequent interaction and communication. The dependency was at a higher level of designing and implementing a new methodology for the study of small-scale enterprises. As discussed earlier, the collaboration on this project was at the conceptual level not at the day-to-day research activity level. The participants designed their activity around the six-monthly face-to-
face meetings, that was supported by the EU-India programme, and used the online technology to inform each other the state of play. The participants in the Bankura Project took a similar approach. Raja was implementing the policy of technological intervention on the brass workers in the Bankura region while Daniel collected the material for the multimedia archiving and for the web site. In this project, like in Dairy Project, the participants were collaborating on planning and designing the research during face-to-face meetings and carried out their tasks when dispersed. Only on one occasion the participants used the telephone to discuss the progress of the project. Emails were used to share information between the participants. Consequently, in the Dairy and Bankura projects, the difference in preference on technology use did not affect the collaboration. This enabled the projects to progress without much difficulty that might arise from limited interaction and communication between participants. Nevertheless, the pace of progress of the two projects were varied, due to among other aspects, the fact that the Dairy Project was integrated into the academic's daily activity while the Bankura Project was not. Unlike these two projects, the collaboration in the Computer Science Project was at a developmental level, where the activity was to build a web based resource on the area of network technologies, design collaboration between students and design learning technologies. To carry out this activity the participants depended heavily on each other's contribution to the tasks. The tasks were divided, however, because of the nature of the task, which required attention from both participants on a day-to-day basis, merely the division of tasks was not enough. The activity needed frequent interaction and communication for the collaboration to progress and the participants relied on the online technology to communicate. However, because of the technological preference, the online communication channels were rarely used. Hence the research activity took place around face-to-face meetings, leading to slow progress of the project and affecting the motivation of the participants and the momentum of the collaboration.
The summary of interaction and communication and its impact on the collaborative projects can be presented as follows:

<table>
<thead>
<tr>
<th>Projects</th>
<th>Participants</th>
<th>Interaction and communication</th>
<th>Impact on the project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medium used for daily activity</td>
<td>Online medium used in EU-India programme</td>
<td>Technological preference</td>
</tr>
<tr>
<td></td>
<td>Face-to-face</td>
<td>On-line</td>
<td>Telephones</td>
</tr>
<tr>
<td>Floriculture</td>
<td>Kalyani</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Daniel</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Ajith</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Joe</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bankura</td>
<td>Raja</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Daniel</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Dairy</td>
<td>Kalyani</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Leo</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

SP- Slow progress, RP- Rapid progress, FTF- face-to-face meetings.

From the above table, it is clear that there is a preference of one technology over another by certain groups of people. The Indian participants rely on telephones in their daily interactions with their colleagues at work while the Europeans rely on emails. The EU-India programme having its main coordination centre in England expected all the participants in the programme to use emails and other online technologies for interactions in various projects. Hence there were no provisions for the participants, especially Indian participants, to use the medium of communication that they are comfortable with and are prefer using. This has impacted on the pace of projects' development.

As discussed above, in projects where the tasks were divided among the participants and they did not have to rely on others to complete it did not get affected by the difference in preference that existed with regards to technological channels. In these projects participants were able to work around face-to-face meetings and did not have to rely on online technology for interaction and communication when dispersed. Online technology, such as email, was used for information dissemination rather than discussion. Furthermore some participants have used the telephone, to
discuss the state of play in their project. However, since telephone communication between India and Europe is expensive, interaction over this medium was very rare (used only once in the Bankura Project).

In projects where the participants had to interact and communicate frequently for the progress of the activity, had to rely on the online technology. Since some of the participants had preference to a certain type of technology, the participants in projects that required frequent communication for the development of the activity, encountered difficulty and had affected pace of the project's progress. However, the limited face-to-face meetings enabled the participants to still pursue their activities although the progress was slow.

The preference with regards to the communication technology medium needs to be recognised and supported for a successful creation and completion of a collaborative activity. As failure to do so would exert a lot of pressure on the need to introduce frequent face-to-face meetings. When the interaction and communication cannot be supported through the preferred technological medium and there were possibilities of limited face-to-face meetings, then the infrequent interaction and communication affecting the progress of the activity of the dispersed group can be overcome by dividing the tasks and pacing them around the face-to-face meetings. The online technology can be used as a tool for information dissemination rather than discussion and decision making. This approach to interaction and communication has been successfully employed in the Dairy Project enabling the participants to work effectively and make rapid progress.

8.5 The notion of success

To measure success with regards to collaboration in these four projects, a number of elements - tangible and non-tangible- were identified across the four cases. On the basis of these identified elements the success and failure of the collaboration these projects were measured in the case study chapters. The elements as a measure of success was identified as achieving the participants' personals goals, projects goals, maintaining established links between the participants, extending the current projects further, the production of tangible products such as multimedia product and/or academic publications. Hence the projects' success was measured as seen in the table below:
As seen in the above table the Floriculture Project came to an end after a short life span and none of the elements were fulfilled in this collaboration. In the Floriculture Project, Kalyani's or Daniel personal goals were achieved as Kalyani's personal goals were not represented in the project while the poor quality of the media material that Daniel had collected in the Floriculture sector was not good enough to fulfill Daniel's personal goal of knowledge archiving. Consequently the Floriculture Project came to an end after the first few months of setting up and did not fulfill any of other elements used to measure success.

Unlike the Floriculture Project, the Bankura Project and Dairy Project fulfilled all of the elements of success and the status of these projects is that they are still active. Participants in the Bankura Project achieved their personal goal, the project's goal. They have also maintained their links as they have extended their collaborative activity by securing funding from the Arts and Humanities Research Board UK. Raja and Daniel have also in the process of carrying out knowledge archiving and have also published their study of the brass workers in the Bankura region.

The participants in the Dairy Project also have fulfilled most of the elements identified as measure of success. Kalyani and Leo have fulfilled their personal goals and the project goal. The project is still active and the links between the participants are still maintained. Both participants have published their research carried out in this collaboration. Extending the Dairy Project further is still

<table>
<thead>
<tr>
<th>Projects</th>
<th>Participants</th>
<th>Measure of Success</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floriculture</td>
<td>Kalyani</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Project</td>
<td>Daniel</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Computer</td>
<td>Ajith</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Science Project</td>
<td>Joe</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Bankura</td>
<td>Raja</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Project</td>
<td>Daniel</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Dairy Project</td>
<td>Kalyani</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Leo</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(N/A - Not Applicable, P- Probably)
under discussion. The participants are still working on the development of the methodology for the study of small enterprises.

The Computer Science Project is also active although it did not fulfill its original project goal of setting up collaboration between the students in England and India to build an online resource on network technologies. Nevertheless, the participants have collaborated to identify new goals and redefine the project. Joe and Ajith have fulfilled their personal goals through this collaboration. The participants still maintain their links as they are extending this collaborative activity further. Ajith has designed a self-learning system for the students in his Institution, through this collaboration. Academic publications have also come out of this collaboration on this project.

As discussed in this chapter, the main factors, such as personal goal, working context, coordination and interaction and communication were identified as impacting upon the success of the collaborative activity.

8.6 Summary

In this section I have discussed the four factors, personal goals, working contexts, coordination and interaction and communication and the impact of these factors on the collaborative projects between academics across cultures. The four cases strongly suggest that if personal goals are not represented, the participants who have joined the collaboration with a clear idea of what they wanted to achieve might feel frustrated of the lack of opportunity to do so. This in turn would affect the participation in the collaborative activity and impede the successful completion of it.

The working contexts of the participants also need to be taken into account when setting up collaborative activities. As explained above, difference in work practices, such as research being the only activity for one participant while research being a part of various other activities for another could lead to difference in expectations. The participants expect the others to act and participate in the same way as they do themselves, which can create misunderstandings between the participants. Hence, the participants need to have some knowledge of the work commitments and practices of the other participants in their collaborative activity so that they would not be frustrated by slow responses and quiet periods. Furthermore the difficulties faced through the difference in work practices could be partially addressed by integrating the collaborative activity into the daily activity of the participants. This would give the academics to address this research as part of their teaching and allocate a specific amount of time and resources.
The four case studies also show that the role of the coordination has to be that of the facilitator and mediator and not instructor as it is the participants who should decide on the activity they want to participate in.

The issue of preference of one technology over another was also discussed in the above four cases. Access to on-line technology and dependence on it for interaction and communication at a distance has raised the issue of preference. Participant from India preferred the use of telephones while the Europeans preferred on-line technology. This led to limited use of the on-line technology and limited interaction and communication across the distance. Consequently, it also highlighted the importance of frequent face-to-face meetings to maintain and develop the collaborative activity.

The cases also suggest that a certain approach to collaboration enabled the participants to collaborate more effectively as they were not influenced by the difference in preference for a particular technological channel. Dividing tasks between the participants and working around face-to-face meetings were an approach that was effective when dispersed participants did not have to depend on each other to complete the tasks. This to an extent contributed to the progress of the collaboration. However when dispersed participants had to rely on each other on the day-to-day activity for the progress of the project, the preference over telephone communication over online communication has impacted on the projects’ development.

The elements identified across the four cases to measure success were, personal goals, project goals, maintaining links, extending the current project, creating a product such as multimedia products and academic publishing.

As discussed, the interacting activity model developed for cross-cultural research lent itself successfully to map the different contextual elements that impacted upon the collaborative process in a cross-cultural environment.
Shown in the above diagram, the activity systems of the participants from their different contextual environment were mapped. Different rules, communities from which the participants were members of were also mapped, making it possible to recognise the socio-cultural impact on the collaborative activity. The model also made it possible to recognise the different mediating tools in different contexts and their effect on the collaborative process. However, this interacting activity system model does not lend itself to map the simultaneous occupation of different contexts and cultures which impact upon the cross-cultural collaboration. Hence, in the next chapter I extend this model to incorporate the newly created collaborative activity system into this interacting model and the simultaneous habitation of the participants in different contexts.
CHAPTER 9. EXTENDING THE CROSS-CULTURAL ACTIVITY SYSTEMS MODEL FOR CROSS-CULTURAL COLLABORATION

9.1 Introduction
This chapter discusses the implications of the discussion in Chapter Eight for the development of Activity Theory. As discussed in the previous chapter, the interacting activity systems model for cross-cultural research proposed by Cole lent itself to map the components of the activity systems of participants from different cultures and contexts. This made it possible to study the similarities and difference in work practices, cultures and the preference and use of technology across contexts. However, the process of arriving at a shared objective for a cross-cultural collaboration and the newly constructed context of the collaborative activity could not be represented in this model.

The following section (8.2) presents the limitation of the interacting activity systems model proposed by Michael Cole for cross-cultural research. A model to represent the process of arriving at a shared object and the role of coordination is presented in section 8.3. Section 8.4 presents the Activity systems model for the study of cross-cultural collaboration.

9.2 Limitations of interacting activity systems model for the study of cross-cultural collaboration
In a cross-cultural collaborative environment there comes into play more than one context. This is not because participants come from different cultural contexts, but because while coming from different contexts they are also creating new contexts through their collaborative activity. The multi-layered contexts, which are dynamically involved, cannot be represented within Cole’s model.

![Cross-cultural Activity Systems](Fig.1)
If we take the shared objective of the participants and map the collaborative activity system created by the interacting model of a minimum of two activity systems (see Fig. 1), it would lead to creating a new single activity system as seen below (Fig. 2.).

![Cross-cultural Collaborative Activity System](image)

The participants would have created a new environment with new community and rules. Moreover the division of labour too would be taken from the newly created community. When the participants from different contexts use different tools to mediate their activity, they will have to negotiate and arrive at tools that would be common to both participants.

Nevertheless, this new cross-cultural collaborative activity system (Fig. 2) cannot exist in isolation, outside the influence of the different working contexts of the participants (Fig. 1). Since the participants are physically situated and participating in the daily activity in their respective working contexts, while simultaneously inhabiting this new cross-cultural collaborative activity, they are constantly moving between these two activities and the two different cultural contexts. The community in the new activity system too is made up of members from the participants’ respective working communities. Hence, they too will be situated in their different working contexts and be moving between the two activity contexts. As a result the working contexts would impact upon the new collaborative environment and the new environment would impact on the working contexts. It is important to take this into consideration and represent the newly created activity system along with the cross-cultural interacting activity systems. The movement between these activities can be represented as follows:
Cross-cultural collaborative activity systems model
(Fig. 3)
A and B working in their respective contexts are depicted through the two interacting activity systems model. The shared objective of these participants in the cross-cultural activity system (Fig. 1) would lead to cross-cultural collaboration and be represented by an activity system. This cross-cultural collaborative activity system (Fig. 2) can be seen as part of the interacting activity systems. The two-way arrows linking the interacting activity systems and the cross-cultural collaborative activity system show the movement of A and B and their community between their respective working contexts and the newly created cross-cultural collaborative activity system. These three interacting activity systems model would enable the mapping of the cross-cultural collaborative activity while recognising the impact of the cultural aspects that prevail in the working contexts of the participants upon the activity and the shaping of the process.

Here, because of the two dimensional representation of the various contexts of activities, we can only represent A and B’s simultaneous occupation of the various contexts as movement between their respective working context and the newly created collaborative context. The multi-layered complex cultural contexts occupied by the participants cannot be dynamically represented. This is one of the limitations of the two-dimensional representation of interacting activity systems model for cross-cultural collaboration.

It must be noted that although this study has only two participants from different contexts collaborating, the activity systems model for cross-cultural collaboration follows the basic principle of Cole’s proposal for comparative cross-cultural study, of having a minimum of two interacting activity systems model. However, in the cross-cultural collaborative activity systems model, the participants will be creating a new context, which would exist along with the contexts of all the different participants’ activity systems. Hence the cross-cultural collaborative activity systems model would have a minimum of three interacting activity systems model as seen above. If there were more than two participants from different contexts collaborating then the activity systems model would have all these different participants’ activity systems along with the newly created cross-cultural collaborative activity system. It could be represented as follows (Fig 3.a):
At this juncture there are only two contexts that are mapped because this is based on the assumption that A and B had arrived at the collaborative activity on their own, unlike the situation in this study where A and B were initially introduced through the EU-India programme. Consequently A and B also inhabit another context although this would melt away as the collaboration becomes sustainable and the EU-India programme would act only as facilitator and mediator, thus merging with the community of the cross-cultural collaborative community.

9.3 Process model for cross-cultural collaboration
Participants became members of the EU-India programme community because the programme was based on issues that were of interest and had the potential for catering to their personal goals. Some of the participants in the collaborative programmes joined the EU-India programme from its inception while others joined and became part of the community as the programme developed. The EU-India Cross-Cultural Innovation Network programme has its own community, division of labour, rules and objectives. Consequently the collaborative activity that the participants engaged in was also linked to the interests of the EU-India programme and its cultural context. The activity system of the EU-India programme can be represented as follows (Fig .4):
The participants are members of this community because of their shared interests in relation to the programme, although the interests were broad. The EU-India programme’s objectives articulate these broad interests. Hence the participants, while inhabiting their respective working contexts, would also inhabit the cultural context of the EU-India programme. In addition to this the participants would also inhabit the newly constructed cross-cultural collaborative context created as their collaborative activity.

As members of the EU-India cultural context, at the start of the process of cross-cultural collaboration, the participants design and project their activity within the script of the EU-India programme. However, since the EU-India programme is seen as a catalyst, the EU-India cultural context would cease to exist when the cross-cultural collaborative activity is set up and becomes sustainable. Consequently, the EU-India programme activity would be merged with the cross-cultural collaborative activity system and become part of the culture of this new cross-cultural collaborative context. If this does not take place and the participants are dictated by the script of the EU-India programme overriding the participants’ interests then the cross-cultural collaborative activity would not emerge. The Floriculture Project is a good example of this situation, where the project had tried to express the EU-India programme’s interest rather than build on the specific
interests of the participants. As a result the activity came to an end without creating a cross-cultural collaborative activity system.

Another limitation of the interacting activity systems for cross-cultural collaboration, is that though the model allows us to represent the shared objective, it does not have a mechanism for mapping the process of arriving at a shared object for collaboration in a cross-cultural environment. The process of arriving at shared objectives while inhabiting various cultural contexts in a cross-cultural environment is important to the success and sustainability of the collaboration. This multi-layered dynamic process can be represented with the help of the following three-step diagram (Fig. 5).

In the Fig. 5 above, Step 1 shows the participants A and B inhabit part of the area of the EU-India programme. This is because the EU-India programme encompassed a broader area of interest of the participants A and B. It is on this basis that these participants joined the programme to become members of that community. Since A and B are not familiar with specific interests of each other they remain separate. During this time of being a member of the EU-India programme, A and B are introduced to each other through face-to-face meetings, workshops and conferences. The new context that A and B have arrived at provides the support system for A and B to identify their shared interests.

In the second stage A (1) and B (1) gravitate towards each other (as shown by the arrows) when they gather information on each other's interests and identify shared interests. This leads to the participants identifying a shared objective. However as seen in step 2, the “shared object” is shared by A, B and the EU-India programme. As a result A (1) and B (1) while inhabiting in their respective working contexts and the collaborative context, they are also inhabiting the EU-India context. At this stage, because of the support and facilitation of the programme A (1) and B (1) are collaborating on an activity to a large extent within the framework of the programme and its specific objectives. The extent to which A (1) and B (2) occupy the area of the programme would
show the extent of working within the EU-India framework. The occupation of the programme space also reflects the support, mediation and facilitation provided by the programme, to A (1) and B (1) on their collaborative venture. These supports may be provided as meetings, workshops and online environments for interaction and communication.

In Step 3, A (2) and B (2), which have an established shared interest and collaborative activity, move away from the tight structures of the EU-India programme’s framework to pursue their own shared interests (as shown by the arrows). This is supported and facilitated by the EU-India programme since A (2) and B (2) continue to be members of the programme and the outcome of the collaboration activity would feed into the EU-India programme’s outcome. Still A and B occupy three different cultural contexts and these contexts would impact upon the collaborative activities at varying degrees at different times. The sustainability of the collaboration between A (2) and B (2) would lead to the participants extending their collaborative activity and becoming independent from the EU-India programme. The three steps of arriving at shared interest and the simultaneous occupation of the various contexts can be brought together to express the complexity of this dynamic process in the diagram below (Fig. 6):
In the above model participants A and B join the EU-India programme and inhabit the EU-India programme’s cultural context while inhabiting their respective working contexts. The interests of the participants are encompassed in the EU-India programme’s objective and this can be seen in the model where A and B are located partially within the circle of the EU-India programme. As the participants at workshops and conferences express their specific interests and personal goals, the process of arriving at a shared object and the construction of the cross-cultural collaborative context starts. Consequently A and B would gravitate towards each other and create a shared objective. This is represented in the above diagram as overlapping A (1) and B (1). However, the interests are expressed in relation to the EU-India programme and are directed by the programme. Hence A (1) and B (1) can still be seen inhabiting a large part of the programme context while inhabiting their respective working contexts and the new cross-cultural collaborative context. But as the shared objectives are fine-tuned through interaction and communication, the cross-cultural collaborative activity moves away from the cultural context of the programme. The programme recedes to the back and merges with the newly constructed cross-cultural collaborative context as the facilitator and mediator for the cross-cultural collaborative activity. This can be seen in the above model, where A (1) and B (1) move down as A (2) and B (2), away from the EU-India programme, but there is still a part that occupies the EU-India programme’s context as the programme acts as the facilitator and mediator and the cross-cultural collaborative activity feeds back into the programme’s objective.

9.3.1 Implications for management of collaborative programmes

Although here, this model has been applied to the particular instance of the EU-India programme, it can also be employed for management of similar programmes. Successful management of a complex programme, such as the one under study, relies heavily on mediation. This has to take place at various levels such as, communication, conceptualisation and conflict resolution. The extent of the mediation varies from the initial stages of setting up the collaborative activity to the later stages of completing the activity. The three broad stages can be seen as follows:

1. Conceptualisation and communication – active mediation
2. Conflict resolution and sustaining momentum – active mediation
3. Creating stability – passive mediation

The first stage would be the conceptualisation when participants come from different cultural and linguistic groups. The managers have to provide mechanisms to initiate communication between participants and provide an environment that is conducive for articulating the participants’ different
expertise and interests. As seen in the above diagram (Fig.4) the participants are in the cross-cultural programme but have not identified their common interests that would enable them to initiate a collaborative activity. An environment for communicating the ideas that would lead to identifying a common interest could be best provided through face-to-face informal meetings and workshops between the participants, mediated by the managers/coordinators. Managers need to use these meetings to encourage the participants to present their work and what area or topic they might be interested in pursuing in the project. This could be followed by brainstorming sessions based on the participants’ personal interests to identify a possible collaborative activity. The coordinators/managers of the programme can mediate between the participants’ collaborative project objectives and the aims and objectives of the programme. This enables the participants to shape their activities without any constraints that might be placed by the programme’s overall framework. During these face-to-face sessions the coordinators have to negotiate and mediate to identify the preferred means of interaction and communication of the participants. This needs to be followed up with providing the necessary communication tools in order for the participants to maintain the momentum created during the face-to-face meetings.

The second stage would be when the participants have identified their shared interests and decide to pursue a collaborative activity where their personal interests are reflected in the project’s objective (as seen in Fig.4). Hence this stage would be that of conflict resolution and sustaining momentum. At this stage, the coordinator/managers need to be aware that these participants who have not worked collaboratively with each other before would encounter difficulties with regards to different expectations, work practices and institutional cultures. Conflict that might arise due to these differences can affect the progress and momentum of the collaborative activity. Therefore the coordinators have to be ready to mediate and negotiate to resolve any conflict or misunderstandings that might arise. In order to avoid any misunderstanding that might arise out of simple practical issues, such as a sudden increase in workload at their institutes, the coordinators have to encourage the participants to keep each other informed of any change that they think might affect the progress of the collaboration. The coordinators also have to encourage the participants to discuss their preferred work patterns with each other and arrive at an agreement between them. They can also draw the attention of the participants to the different work practices and institutional cultures by providing opportunities for the participants to visit each others’ work environment and spend some time in order to understand the difference and negotiate an acceptable work pattern. These visits can also be used as a vehicle to keep the momentum of the collaborative activity, which would motivate the participants to overcome any obstacles there might be to the progress of the collaboration.
The role of the co-ordination in the final stage would be to provide the necessary facilities for the participants to maintain stability (as seen Fig.4). This could be done by consulting the participants as to what type of support they would like to be provided with. One possible means of support is to provide opportunities for the participants to have regular face-to-face meetings supported through effective communication channels identified by the participants themselves. At this stage the participants would have worked out their work practices, expectations and their collaborative goals, hence coordinators mediate only at the level of organising meetings and providing the necessary support requested by the participants. Here the coordinators would be passive mediators. They act as mediators only on the request of the participants, thus leaving the participants to pursue the objective of their collaborative activity.

Using this process model the process of cross-cultural collaboration and the impact of simultaneous habitation of the cultural environments can be examined. This model lends itself as a management tool for mapping the process of arriving at shared objectives for cross-cultural collaborative activity. This would make it possible to examine the process of cross-cultural collaboration and the factors that impact on it.

However, the above-mentioned model alone would not be adequate to address cross-cultural collaboration as it does not provide the tools to examine the dynamic relationship between the actors, mediating tools and the objective in a collaborative activity. Hence the process model can be merged with Cole's model to arrive at an activity systems model for the study of cross-cultural collaboration.

9.4 Activity systems model for the study of cross-cultural collaboration

The aspect of simultaneous habitation of the different cultural contexts can be incorporated into the cross-cultural activity systems model in order to present the dynamic relationship between the working contexts of the participants and the newly created cross-cultural collaborative context. This can be represented as follows (Fig.7):
Cross-cultural collaborative activity systems model
(Fig. 7)
As the above diagram of cross-cultural collaborative activity systems model shows, the interacting activity systems model (Fig. 1) where the participants A and B are situated in the respective cultural contexts enables the mapping of the different rules, communities and tools that mediate the activity within those cultural contexts. However, for cross-cultural collaboration this interacting model is not sufficient, since there is a need to be able to map the newly created cross-cultural collaborative activity system, in relation to this interacting activity systems. The newly created cross-cultural collaborative activity system (Fig. 2) cannot exist in isolation, as the participants in the cross-cultural collaborative activity are situated in their respective cultural contexts while creating and participating in the cross-cultural activity. As a result they are influenced by the norms and cultures of their working contexts that will impact and shape the cross-cultural activity. Hence, the newly created cross-cultural collaborative activity system is presented as part of the model by representing this at the top of the interacting activity systems. The above model also has the representation of the process of arriving at a shared object and the simultaneous habitation of the contexts where the shared objective leads to the cross-cultural collaboration. As seen in the above model, the dashed circles A and B are moving towards each other and are creating a shared objective seen by the intersecting black circles A (1) and B (1). Here A and B inhabit their own cultural context while inhabiting the cross-cultural context created by their collaborative activity. The intersecting area of A (1) and B (1), the shared objective, is represented by the cross-cultural collaborative activity, in Fig. 2. This cross-cultural collaborative activity system would represent the community, rules, division of labour and the tools which have been negotiated and created by A and B for their activity. Since the model has representation of simultaneous occupation of the contexts by the participants, the relationship between A and B’s respective working context and newly created cross-cultural contexts need not be represented as movements between the activity systems.

The above model will lend itself to mapping the activity systems of cross-cultural collaboration, where not only the different contexts of the participants but also the newly created cross-cultural context can be mapped. In this model the process of arriving at a shared objective and the simultaneous occupation of the contexts can also be represented. Consequently, the model enables one to map and examine the factors such as mediation, co-ordination, context and motivation that would impact upon a cross-cultural collaborative activity.

9.5 Summary

The limitation of the interacting activity systems model for the study of cross-cultural collaboration was discussed and an extension of the model was suggested. This proposed model for cross-cultural
collaboration makes it possible for mapping collaborative activity in a cross-cultural context. A process model was also proposed to map the process of arriving at shared objectives. The model also lends itself as a management tool for cross-cultural collaboration.

Having discussed and developed models for the study of cross-cultural collaboration, in the next chapter I will reflect on and discuss my role as a researcher the EU-India programme.
CHAPTER 10. REFLECTION

10.1 Introduction
In Chapter 8, I discussed some of the issues that had impacted on the collaborative projects developed during the EU-India programme. The Discussion chapter presents an analysis of the identified issues and the synthesis with the Activity systems model, I use this chapter to address some of the issues that have played a part in redefining and shaping the study presented in this thesis. Having carried out a qualitative study in which the participant observer techniques was one of the approaches used, in this chapter I take somewhat of an action researcher’s perspective, to reflect on my role in the programme and on the various projects and the process of the study. As an action researcher, it gives me the opportunity to detach myself from the study and address the impact made by my role as a researcher on events.

Firstly, my thoughts on the scope of my research are presented. Here I address my move from the initial study of computer mediated communication to concentrating on the collaborative process (10.2). Following this, in section 10.3, I discuss the issues such as access to the case study participants (10.3.1.1), my own role as an action researcher (10.3.1.2) and reporting the finding (10.3.1.3) that have impacted on the empirical material collection for the study. In section 10.4, I address the issue of tacit understanding of social and cultural systems and its role in mediation, while in section 10.5 I discuss issues such as funding and supervisions that have also played a part in my study. Finally, in the summary (section 10.6) I draw together the various aspects that have been discussed in this chapter.

10.2 The scope of my research
In this section, I reflect on the scope of my study, which had changed over time. The change was dictated by the factors that were emerging in the scenario under study. Even though a number of studies during this time had suggested that online technology be used for collaboration, this proved problematic in the EU-India programme.

In the latter part of the 1990’s the use of technology had become widespread in academia, with Western Europe and North American academics adopting computer-mediated communication tools for their daily interactions and communication in their professional and private lives. The widespread assumptions as the EU-India was in planning was that the “world is wired” and everyone was using computer networks to interact and communicate. Based on these assumptions
Ragu, coordinator and instigator of EU-India Cross-Cultural Innovation Network programme had presented in its plans issues such as "building a virtual network", building a web site for information dissemination and using computer mediated communication tools for interaction and communication between dispersed participants in the programme. During this time India seems to be providing the manpower to many leading western companies on computer technological development, as Bangalore became the Silicon Valley of India. However the use of technology in the daily lives of the Indian academics was still in its infancy. This was not seen as an obstacle by Ragu or Arun (the Indian coordinator) as the Indian academics in the programme would be receiving funding to set up their computer networks enabling them to use computer mediated communication tools to interact and communicate in the programme. Based on these expectations various on-line tools were provided to facilitate collaborative activity. In the initial stages the Indian participants claimed to be familiar with the on-line technology and said they would use it in the project. However, observations from the workshop and conference showed that the Indian participants were familiar with the presence of on-line technology but were not too comfortable using it. This observation was confirmed as the programme evolved. As discussed in Chapter 8 differences in email culture caused problems with regards to using the online technology. There were also linguistic issues that posed difficulties (See Chapter 8).

Even when the participants used email there were various difficulties for the researcher in gaining access to these email messages. Both Indian and European participants were using email to interact with the EU-India coordinator. However, these "confidential" emails, as discussed in Chapter Three were not available for my use in the study. The number of emails that I did get access to as a manager in one of the projects (see Chapter 5) was limited.

The assumptions that were made in the EU-India programme and the steps that were taken in relation to these assumptions delayed and at times, in the initial stages, derailed the collaborative process. This might have impacted on issues such as trust and respect between the participants. From this experience, it is important to point out that assumptions can be made as long as one is prepared to reevaluate these assumptions with regards to reality. In order to overcome these possible pitfalls, it is advisable to carry out preliminary investigations to ascertain whether the assumptions that are core to the programme are in fact the reflection of reality. The initial stages of a programme are an important time when participants form impressions and forge ties. Hence it is essential that mistaken assumptions do not impact upon the early stage and create unnecessary tension.
These assumptions influenced not only the EU-India programme but also my proposal for the study of computer mediated communication. This will be discussed next.

10.2.1 Changing focus
The move from my initial proposal to study computer mediated communication to my eventual study of collaborative academic projects in a cross-cultural environment was made because the dispersed participants of my study did not use the online technology for their interaction and communication as I had assumed they would.

The fact that the Indian participants did not use the on-line technology as often as the European participants did meant that there were very few email interactions between the collaborating participants. Since three out of the four cases had only one Indian and one European participant, when there were no responses from one party then it led to no interactions taking place. In addition, the participants did not use the on-line “TeamRoom” environment provided to facilitate their collaboration or the mailing list that was provided as means for information dissemination.

If I were to carry out my initial study of computer mediated communication then I would have needed to have access to the on-line interactions between the participants. The only source of data was the communication trails that the coordinator had access to. However limited the issues that might have risen in this set of communication trails, it would have given some idea of the use of the medium for collaboration. The fact that this communication flow was not available for my study meant that I had to take up my study to cover a broader area of cross-cultural collaboration. Furthermore I could not study the very crucial and interesting aspects of conflict resolution, the role of the coordinators in this situation and the use of online technology for cross-cultural collaboration. Hence my study that was initially addressing issues from the view of computer mediated communication in a cross-cultural context moved to cover cross-cultural collaboration where computer mediated communication became just one of many aspects that had impacted on the collaborative process. Even though the initial study of computer mediated communication for cross-cultural collaboration would have raised issues such as institutional context, work practices, and the role of the coordinator that have arisen in my current study, it would have addressed these issues only with regards to the scope of using the online technology in this context. My current study has enabled me to address the above issues from the point of view of collaboration in a cross-
cultural environment. As a result this study now addresses issues that are relevant to collaboration in general and cross-cultural collaboration in particular.

10.3 The nature of research in this programme

In this section, I present a brief description of the different research roles and techniques used to collect data for the study. Section 10.3.1 discusses some of the issues regarding research techniques employed to collect data in the EU-India programme (sections 10.3.1.1 and 10.3.1.2) and reporting of the findings within this community (10.3.1.3).

As discussed in Chapter Three, one of the techniques used to collect data for the study was being a participant observer. A participant observer is seen as becoming a participant of the community that is being studied and while participating the researcher is also observing the activities of the community. Being a participant in the community also brings about the responsibility of identifying instances that can be reported and instances that cannot be included in the study. The researcher has to recognise the ethical issues of presenting data and maintaining anonymity, which can be difficult in a close knit community, particularly a focussed study where the participants can be easily identified. In a situation like this it is important to try to maintain confidentiality with regards to information imparted not only because it is the standard practice in ethnographic studies but also because this particular community that was under study was small and closely knit. However, this might sometimes present the researcher from presenting all the relevant evidence. Nevertheless, this does not mean the findings that come out of the study are not reliable or significant, simply that at some points confirmatory evidence has had to be edited or omitted.

At times, I have also been an action researcher. There were aspects of my participation in the programme, such as building the web site, providing on-line collaborative environments and acting as project manager or mediator, that could be categorized as those of an action researcher. Being an action researcher, the researcher is actively involved in participating in the research activity of the participants that she is studying. Here the researcher would try to bring about change by introducing something new which in turn would impact upon the scenario that is being studied. This change is then studied in relation to the overall activity.

In the following section I present some of the issues that had arose in the project with regards to data collection.
10.3.1 EU-India programme and data collection
In the EU-India programme being a participant observer had posed a number of problems such as access to the case study participants who were situated on two different continents, access to online communication material and the fact that the limited number of participants in the programme made the reporting of the gathered data problematic. In the following section I present these issues in detail.

10.3.1.1 Access to the case study participants
Having broadened the scope of the study, collecting the data for the study was still proving to be difficult. Now my study was addressing the collaborative process between participants from two different continents who are not using the online technology to interact and communicate in their respective projects. As discussed in Chapter 8, the participants were relying heavily on face-to-face meetings and most of the meetings took place where the European participants went to India. This posed difficulties in my observing and collecting data for my study due to lack of funding to travel.

The fact that I was not able to travel to these institutions and countries when it was necessary limited observations that would have provided me with raw data for analysis. For instance there were a number of occasions at the beginning of the EU-India programme when there would be no response from the Indian participants to the emails from the European participants. Even though I wanted to verify this, I could not as I did not have the necessary funds to travel to India. Nevertheless, as the collaboration progressed, there was no significant increase in the online interactions between these participants. When queried on this issue, Ajith, the Indian participant explained that they preferred to use the telephone to interact and communicate while they use the emails for information dissemination unlike the European participants. I therefore extended my interviews to include the question of whether this was the case with all of the participants or only this particular participant. The results showed that there was a marked difference between the Indian and European participants with regards to using emails for interaction and communication. This made it difficult to ascertain as to whether the participants were not using the emails at the beginning of the programme because they preferred the telephones or because they did not have access to the technology. To know the actual situation I would need to carry out observations in context but instead I had to rely on interviews that recounted events. Though I was a participant observer, observation was constrained to very few occasions, making observation of all the case study participants, both in Europe and India, limited and difficult.
In a programme where participants are dispersed it is essential to set up mechanisms that would enable the researcher to have easy access to the participants and their contexts. Even when one does manage to study the online interactions it is important to know the "real" world environment of the participants and their attitudes in order to arrive at a comprehensive understanding of the phenomenon under study. The mechanism to support research in such situations can be practical such as providing sufficient funding for travel, as well as conceptual aspects such as the researcher being a member of the group that is being studied.

The difficulties faced in collecting data through the online interaction and communication was discussed in section 10.2.

10.3.1.2 Role as an Action Researcher
Within the EU-India programme, like all participants I was seen as an action researcher. There were aspects of my participation in the programme that could be referred to as action research. As an action researcher I provided the programme with online tools to support collaboration between dispersed participants and designed the programme's web site. My role extended beyond providing these tools, such as the web site, mailing list and the collaborative environment, to encourage the participants to use them. This role enabled me to interact with not only the participants who were involved in the case studies that I was studying but also the others who were involved in the programme. I was able to understand the concerns of the participants with regards to using the technology, which I was able to pursue in my research. Being an action researcher in the programme allowed me to persist with trying to reshape the tools in order for it to be attractive enough to draw the participants in and realize that there was more than just the capabilities of the tool that was inhibiting usage.

Being involved as an action researcher in the scenario where the study is carried out provides the researcher with insights into a number of issues relating to the study. As an action researcher one is able to witness the changes that take place in the scenario and study their impact. Since the changes that are introduced are those that the action researcher sees as relevant to the context, the researcher is able to view these changes with regards to the study that they are carrying out. It is as advantage to be an action researcher in a programme such as the one discussed in this thesis as there were a number of new aspects that needed to be explored. Hence taking the role of action researcher would be ideal when new ideas and their impact are being studied. As in participant observer role, the
action researcher also has the opportunity to build a working relationship with his subjects and being part of the community which is being studied.

10.3.1.3 Reporting the findings
The number of participants in the programme was small in number and any comments made by the participants in their interviews when reported could be traced back to the author of the comments. The fact that the supervisor of my study was also the coordinator of the EU-India programme made reporting some of the data quite difficult.

When participants voiced their concerns or unhappiness about any of the programme’s activities they did so telling me that it was “off the record”. There have been instances where the participants have expressed their displeasure with particular issues in the EU-India programme during conversations over dinner but when the same issues were raised during interviews they would express the exact opposite of what they had said before. This situation was seen predominantly with the Indian participants. Indians generally show a high level of respect to people in high positions especially those in the area of education. With the issue of respect, it is seen as disrespectful to question or to disagree with the superiors as they look up to the people in position to give them guidance and support to expand their knowledge. Even those who see themselves as professional equals would not question those who are in a higher position. The hierarchical system prevailed in this instance where the Coordinator had the status and power to dictate the activities. The EU-India coordinator is a first generation British Indian who is a professor. The Indian participants felt it would be wrong to question or disagree with his approach or his decisions although at times they strongly disagreed with some of the decisions. This attitude can be attributed to the Indian culture, making it difficult to grasp the actual standpoint of the Indian participants with regards to issues that they were not happy with.

The fact that the Coordinator was a British Indian whose residence in England for more than thirty years made him an “insider” and an “outsider”, to the Indian participants (see Chapter 3 for definition). From the cultural point of view, as an Indian the Coordinator was seen as an “insider” and being a British Asian he is also seen as an “outsider”. As an “insider” the Indian participants gave him the respect as a senior person in a high position but as an outsider the participants felt he was removed, making it difficult for the participants to break down the barriers to express their concerns. One of the instances where the Indian participants felt that the Coordinator was an outsider was with regard to writing the technical reports for the EU-India programme. Technical
reports were six-monthly reports where the research activities and progress of them were presented for the European Union, the funding body. The Coordinator insisted that these reports be produced regularly, as instructed by the funding body. The Indian participants produced reports regularly while the European participants did not. The Indian participants felt that they were not being treated the same way as the European participants were and the Coordinator was not addressing this.

The important issue here is that unlike the Indian participants, the European participants expressed their unhappiness quite forcefully to the coordinator and worked on their activities as they saw relevant and fit. Hence the European participants expressed their views very clearly when interviewed. This might be due to the fact that the Europeans know how the European Union works and what is expected of them being the participants in the programme. They were not looking for guidance and approval from the Coordinator or the centre.

As to reporting the Indian participants’ comments, when they did make them, I had to ask their permission. Sometimes the participants picked issues from my interviews that they did not want to be reported. Being a Sri Lankan woman, the participants seemed to see me as their ally and they discussed issues apparently without any inhibition until I switched on my tape recorder. Like the coordinator, the Indian participants saw me as an “insider” and “outsider”. As an Asian they saw me as an “insider” and expected me to understand their grievances. They found it easy to express their concerns. However since I was situated in Britain with the Coordinator as my supervisor I had to be aware that they might see me as an “outsider”, and who might be spying for the Coordinator and the centre. Unlike the Indian participants, the European participants viewed me as a researcher and were happy to discuss their views on the programme. However, they were not experiencing some of the difficulties the Indian participants were experiencing. The Europeans saw the Coordinator as an equal and were ready to express their views and discuss to resolve any disagreements.

Reporting findings where the participating community in the study is small raises more serious concerns with regards to ethics. Since it would be easy for the participants to be identified and their comments known, the researcher has to make sure that when reporting the findings that the consent of the participants is obtained. If issues that are discussed by the participants are insisted upon as “off the record”, then the researcher should make sure that it stays that way even might have an impact on the research outcome. However, the researcher could draw out and present these issues through other means, so as not to infringe a participant’s “confidentiality”.
The role of the researcher in the EU-Indian programme was not confined to that of research alone but at times, to act as mediator between participants and the coordinators in order to resolve conflict and misunderstanding. This role of mediation is discussed in the next section.

10.4 Tacit understanding of cultural systems and mediation

In this section I discuss the tacit understanding of cultural systems and the mediation performed by the coordinator of the EU-India programme and the researcher. Section 10.4.1 discusses the mediating role performed by the coordinator, who is a member of two different cultural systems, while section 10.4.2 discusses the researcher's role as the mediator, who is not a member of any of the participants cultural groups in the programme.

In my thesis I have argued that the role of the coordinator needs to be that of mediator. The coordinator and I have acted as mediators for in the EU-India programme. Did the fact that both of us coming from similar backgrounds, Indian and Sri Lankan and had lived in the UK for some time give us the tacit understanding as to how to approach and negotiate, acting as mediators between the participants? Even though this has to be researched, in the following section I present some of the issues that might have enabled and sometime impeded the mediating role taken by the coordinator and myself.

10.4.1 Coordinator as mediator

As mentioned earlier in this chapter, the EU-India programme's main coordinator is a British Indian who has been living in Britain for more than thirty years. He also has a strong sense of culture and he still has some of his immediate family back in India whom he visits whenever possible. He speaks fluent Punjabi and English. Even though he has lived in England for more than thirty years he is in a good position to be aware of and understand the subtle cultural differences that prevail in India. For instance he differentiates the way the Gujarati's and Punjabi's respond and interact among themselves. Punjabis are very independent minded and have a strong entrepreneurial mind set which is "individualistic" compared to the Gujaratis who are more community oriented with a strong "co-operative" society ethos. The coordinator was in a position not only to understand how the Indians interacted and communicated but also how the Indian cultural and the social system work. With this innate understanding of these intricate issues, the coordinator could be referred to as an "insider".

An understanding of these differences sometimes enabled the coordinator to present and discuss the issues of the project easily with his Indian colleagues. Without any conscious effort the coordinator
would approach the interactions that entailed different process. For instance, once I had to book my accommodation for my visit to Punjab and I had sent an email about it to the participant in Punjab requesting him to organize it, but did not get any response. By this time I was aware the Punjab participants did not tend to use emails and I did not have the means to telephone them. Therefore, I approached the coordinator hoping he would call them and organize my accommodation. Nevertheless, the coordinator told me that, if I am sending an email to the Punjabis then I need to be direct, leaving out the phrases used for politeness, and to include the words “urgent” in the subject area. He advised me to avoid using phrases such as “could you” and “would like to”. I followed his advice and I got an immediate response informing me that they have made arrangements as requested. The Punjabi participant did not comment on this approach, which make me believe that this was an acceptable practice for them. This approach worked in this instance but I was unable to discern how other situations were addressed. However, this shows that the coordinator understood how people responded to this situation.

The coordinator, having lived in the UK and worked on different EU funded programmes, was also able to understand how the British interacted and communicated. He has worked in the British cultural and social system for so long that he understood the system well enough to interact and negotiate in it. His success in the previous EU funded programmes also show that he understood the European cultural system too. In this respect, the coordinator could be classed as an “insider” from the British and European participants’ point of view.

Unlike his communication with the Indians, where he had advised me to be direct, the coordinator followed the email etiquette that is used among the British and European participants. This might be due to that fact that the coordinator had been introduced to the electronic mail during his professional lifetime in Britain. Hence he had acquired the rules of online communication with everyone else when the new medium came into existence.

It is hard to say whether this innate understanding of the cultural and social systems of the various regions by the coordinator had any impact as to how the EU-India programme was set and progressed but it might have made a lot of the mediation easier. The understanding of these systems might have given the coordinator the advantage over someone who does not have such understanding. However, the extents of its advantages need to be studied further.
10.4.2 Researcher as mediator
Like the coordinator, I come from Asia and have been living in Britain, thus having been exposed to both the British and my own culture. Via the knowledge of Britain I have also been exposed to aspects of European culture. Unlike the coordinator, I have been in Britain for only eight years but have been in the academic environment for the entire duration. Hence I have began to understand the cultural and social systems aspects of which I have been exposed through English Literature since I was a small girl. I speak Tamil and English. Although I come from Sri Lanka I share some of the cultural aspects with India because of my native tongue. India, a country as vast as Europe, has a diverse culture with a number of languages being spoken. My mother tongue, Tamil is spoken in the Southern part of India while the participants in the EU-India programme come from the Eastern and Northern parts of India and they speak either Punjabi, Gujarati or the official language Hindi. Hence there is subtle cultural variation between these regions and the cultural difference between the Sri Lankan Tamils and Indian Tamils is slightly accentuated. However, broadly speaking I understand some of the cultural and social systems that operate in the Indian society, so in that sense I think the Indian participants viewed me as an “insider” and discussed their views with me freely. As discussed in the thesis participants would air their reservations to me and I had acted as a mediator to resolve any conflict between the Indian participants and the coordinator.

Even though the participants’ view and my understanding of the systems might have led them to view me as an “insider” I would say that I was neither an “insider” nor an “outsider”. I understood some of the cultural and social systems that prevailed in India but I was not living by them, hence I was at times baffled at certain aspects, as any “outsider” would be. Therefore, I would class my self as someone in the periphery of being an “insider” and an “outsider”. It was being on the periphery that enabled me to approach any of the conflict that I was trying to resolve with an objective view. My limited knowledge of the systems and the participants’ view of me as an “insider” made them trust me to air their views. My own perception of me being in the periphery looking into the action made me address the issues in relation to others in the programme and the programme itself.

As mentioned earlier, I understand aspects of the Indian cultural and social systems as well as aspects of European cultural and social systems. Hence my role as a peripheral observer with regards to the Indian participants also applies to the British participants. This has enabled me to acts as mediator, for example in the Floriculture project, where I believe I brought about positive change. However, it is hard to know what would make a good and effective mediator in a cross-cultural environment.
It is through further research that one would be able to discern whether someone with innate understanding of the cultural and social system or someone who is in the periphery or some one who is completely an outsider, would be a capable and effective coordinator and/or mediator in a cross-cultural context.

In the following section I raise some of the issues that also impacted on the study and lessons learned from them.

10.5 Other issues
This section addresses some of the lessons learned in carry out this study. These lessons range from approaching a study with preconceived ideas, securing funding for travel (section 10.5.1) to the issue of supervision of the research student (10.5.2).

My experience in carrying out a study in a cross-cultural environment, revealed a number of lessons with regards to setting up and carry out research. Some of the issues that need to be addressed are:

- Going into a study with preconceived ideas and assumptions.
  This has already been discussed under the changing focus of the study (Section 10.2.1), so will not be explored here.
- Funding for travel.
- Supervision of research student, in a programme such as the EU-India programme.

10.5.1 Funding
My original study, as discussed earlier, was to investigate computer mediated communication in a cross-cultural context. This meant that as a researcher I would be collecting data by being part of the online group. For the reasons explained above, this was not possible and I had to rely heavily on collecting my data through observations of face-to-face interactions and interviews. At the beginning of the study I was promised travel funds to carry out my study. However it was not made clear as to the frequency of my travel during the course of my study. This ambiguity became a serious problem when I had to move my study to address the collaborative process in a cross-cultural context. The programme could not provide me with the necessary funding to do so. For the first phase of my data collection, once realizing that the participants were not using the online communications for their collaborative activity, I had to use my personal funds to travel to India, since as it transpired later, the EU-India programme, could only fund one visit to India.
It is important when joining a programme similar to the EU-India programme where the appointment of a Ph.D. researcher was not part of the programme’s initial plans, to make sure that there is enough funding to travel to the locations of the study. In this case, my joining the programme was on the assumption that the participants would use online technology and I would not need to travel as often as I would if it were a study of the collaborative process. Hence it is important to have a realistic idea of funding, especially studying computer mediated communication with participants from different continents as the study could change and create real practical difficulties with the research. One is prepared, as a researcher, to realign the study at the conceptual level but is unaware of the practical difficulties that might arise out of this change, such as funding in this case. These simple practical issues could create as much difficulties to carrying out the study as a conceptual change might.

10.5.2 Independent supervision
In my study the supervisor was the coordinator of the EU-India programme in which I was carrying out my research. It was the coordinator who had created this Ph.D. post in my University; hence he automatically became the supervisor. Furthermore he was the lead instigator of the EU-India programme and he had been liaising with most of the participants for more than six years in order to gain funding and set up this cross-cultural programme. This made the coordinator understandably very protective towards the programme, which made it predictably very difficult for me as a researcher to critically address issues that rose in the programme. His role as the coordinator overrode his interests in the role of supervisor. As a result, it became clear that this dual role as the coordinator and the supervisor was understandably a difficult balance to strike. In order to overcome this complex situation my supervisor and I discussed and agreed that I would work closely with my second supervisor. It was agreed that, since my second supervisor was not part of the EU-India programme it would be beneficial for me to discuss and develop ideas with someone who is looking at the programme with a researcher’s critical eye and an outsider. Working with someone who was not part of the programme urged me to express my ideas clearly and precisely unlike when I was working with the coordinator where we had taken for granted the common knowledge and understanding of the programme when discussing the context of study. Practical issues such as funding and supervision do have an impact on the research process, hence it is important these issues are taken into account when a researcher embarks on a study.

10.6 Summary
When carrying out research we make assumptions based on our own experiences and knowledge of the context under study. However, in cross-cultural contexts any such assumptions may not reflect
reality as one is not experienced in that environment and does not possess the knowledge to make decisions. If such assumptions are made then one needs to be aware that, these tentative assumptions may be prone to change during the study.

During a study, a researcher takes various roles as required by the study. As a participant observer, a researcher is part of the community and this evokes important issues of ethics with regards to reporting the finding and maintaining the confidentiality of the subjects under study. This issue of ethics comes under a lot of strain when the participants in the study are few and are part of a closely-knit community. In order to be able to extract data without placing any of the participants under undue stress, one has to build a trusting and understanding relationship with the subjects. Furthermore, in a study where the participants are dispersed and situated on different continents, it is important that the researcher has mechanisms, such as necessary funding and communication channels, to interact not only to build a working relationship with the subjects but also to collect the necessary data for the study.

Apart from the role of the researcher as a participant observer or an action researcher, a researcher can also take up the role of the mediator. In a cross-cultural context, it is beneficial to have a mediator who understands the different cultural and social systems of the participants. This would enable the mediator to predict and be sympathetic to the members needs and queries. If a mediator is neither an insider nor an outsider from the point of view of the participants, but does have an understanding of the different systems, might be more beneficial than a mediator from one or the other cultural group.

The issues that have been discussed here could be applied to any research study in general and cross-cultural study in particular.

Chapter 11 will discuss the nature of the contribution of this study to knowledge and its implications for the broader institutional, cultural and technical context. Furthermore, the conclusions made with regards to the Activity systems model for cross-cultural collaboration discussed in the previous chapter (Chapter 9) and some of issues raised in this chapter will also be presented.
CHAPTER 11. CONCLUSION

In this thesis, I have identified issues that might impact on the collaboration across cultures and have proposed a model for the study of cross-cultural collaboration. This chapter draws together the issues identified and the model for cross-cultural collaboration with regards to the research questions that were posed at the start of this thesis in addition it addresses the nature of the contribution to knowledge made by this work. Section 10.1 will present issues that relate to the outcome of the EU-India Cross-Cultural Innovation Network programme as a whole and will draw on the aspects that were raised in Chapter 10. Section 10.2 will address the contribution to knowledge made through this study in relation to the research questions posed at outset while section 10.3 will present ideas for future work.

11.1 The EU-India Cross-Cultural Innovation Network programme

To set in context the individual projects studied, it is useful to have a sense of the success or otherwise of the EU-India programme. The EU-India programme was funded by the European commission and had as its main aim to share knowledge on cultural models of innovation within and across the region. In many aspects it can be considered a success. For example the action research Dairy Project enabled the Indian (Panjab and Gujarat) and the European (Denmark) models of innovation to be identified and studied. This led to the participants extending their research methodology for the study of small-scale enterprises in the informal sector. Furthermore, this paved the way for the dairy farmers from both regions to travel to the other region and learn about the different practices. In the sector of Arts and crafts, the Bankura Project mapped and studied the innovative practices employed by the artisans in the Bankura region.

The programme managed to set up the inter university postgraduate and doctoral training programmes and was able to realize its idea of building cross-disciplinary activities in order to facilitate knowledge flow across organisational, entrepreneurial and regional cultures. The collaborative project and training programmes between England (University of Brighton and University of Wales College, Newport) and India (Delhi University and Punjab Agricultural University) led the EU-India programme to build a network of researchers and share knowledge between these two regions.

The various research collaborations, undertaken under the programme including the four cases discussed in this thesis, contributed in setting up and building the scenario that was conducive to
achieving the EU-India programme’s aims and objectives. The various action research projects carried out in the programme brought together experts and researchers across disciplines, organisations and cultural regions to collaborate and learn from each other.

This study was used by the programme in its published final report (Gill, K S and Jain, A 2002) to underline a number of lessons and identify a number of issues with regards to the factors impacting on the successful setting up, development and completion of the various research activities. From the individual researcher’s point of view, there are a number of other factors related to setting up and carrying out research in a cross-cultural context that also need be addressed. As a researcher one builds a study on certain assumptions but one must be aware of the fact the most straightforward assumptions may not actually be true. So one has to be ready to reevaluate the assumptions if they fail to reflect the reality. In this study, I started my study in “Computer Mediated Communication in a Cross-cultural Context” but this had to be changed to my current study as the reality of the scenario did not reflect my assumption that all the participants in the programme would be using the online technology for interaction and communication. This change required redesigning the research methodology and the techniques in order to capture the data that has been presented here. Being part of a community members who were action researchers at times required me, the participants observer, to take on an action researcher role in order to provide the communication environments, build the web site for the participants and also to act as mediator for the participants. Here the participant observer and action researcher roles overlap making it clear that one cannot build boundaries as to a researcher’s role in the study and the techniques to collect data.

11.2 Contribution to knowledge

The aim of the study was to identify the factors that impact upon the collaborative activity in a cross-cultural context. Within this broad aim there were four main questions that were to be addressed:

- What drives the participants of the EU-India programme in wanting to identify and work on a collaborative project?
- How would the different institutional cultures impact upon the collaboration of the EU-India participants?
- What is the role of the coordinators in the EU-India programme?
• Would difference in linguistic and cultural backgrounds of the participants affect the way in which they approach and use online text-based communication medium for collaborative activity?

The second main question that the study was to address was to ascertain the effectiveness of Cole's interacting activity systems model for cross-cultural research in mapping and discussing cross-cultural collaborative activity.

In this section I present the conclusions drawn with regards to the above research questions posed in my study and explain the nature of their contribution to knowledge.

In this thesis I have identified some of the issues that impacted upon the success of four distributed projects carried out by academics from India and Europe. Section 10.2.1 presents the first of the four issues identified, recognition of personal goals. The second issue of understanding the participants' different working contexts is presented in section 10.2.2. The aspect of human mediation is presented in section 10.2.3 while section 10.2.4 addresses the use of online technology. Section 10.2.5 addresses the contribution made to develop the cross-cultural activity systems model.

11.2.1 What drives the participants to want to work on a collaborative project?

The **personal goals** of the participants have been the driving force behind the urge to instigate and participate in a collaborative project. The motive behind the participants wanting to collaborate was that of self-development and this can be seen in the expression of their personal goals. The shared objectives of the collaborative projects need to reflect the personal goals of the participants for the collaborative project to be successfully launched and completed. The shared objective needs to represent all participants' personal goals in equal measure. I have argued that it is important to recognise the personal goals of the participants and represent them in the objective of the collaborative projects if the project is to succeed.

The findings of this study show that even though collaboration in general is a group/team activity working towards a common goal, it is vital that the individual's interests and motives be recognised and provided for in order for the collaborative activity to be successful. This might not be the conventional view of collaboration where the importance is given to group over the individual, nevertheless the individual has to be recognised within this group for the group to function effectively and achieve its collaborative goal. This is an important issue that managers/coordinators
of programmes, such as the EU-India programme have to take into account when setting collaboration in general and cross-cultural collaboration in particular.

11.2.2 How would the different institutional cultures impact upon the collaboration? My study addresses the different institutional cultures and work commitments that impact not only on the use of technology but also on the success of the collaboration.

Since the participants in this collaborative context come from different working contexts and cultures, these differences have to be addressed. The participants in the collaborative activity need to recognize the difference in work practices between their own context, their collaborator’s context and that of the new collaborative context. The different working contexts of the participants present the issues of difference in work practices and institutional cultures. These differences need to be recognised and communicated between the participants in order for them to understand each others responsibilities in their respective working environments. If the difference in work practices and institutional cultures are not communicated then this will lead to participants feeling frustrated and demotivated.

Even when institutions might be similar across countries, such as the higher education institutions, the national culture would have influenced and shaped the organizational cultures of these institutions. Hence it is important for managers and participants seeking to set up and pursue collaborative activity across cultural and organizational boundaries, to be alert to the differences in work practices and ethos. With globalisation and the growing interest in working across geographical, organizational boundaries this finding reported here is vital for successful international and inter-organizational work and cross boundary collaborative work.

11.2.3 What is the role of the coordinators in collaboration? The role of the coordination agents in projects that are embedded a programme such as the, EU-India programme, plays an important part. The role of the coordinator has to be of facilitation, mediation and scaffolding rather than instruction. The role of the coordinators as mediators can take three different stages:

- Conceptualisation and communication,
- Conflict resolution and sustaining momentum and
- Creating stability.
In each of these types of contribution, the coordinators act as facilitators and mediators in order to enable the participants to arrive at their desired outcome.

It is vital for the role of the coordinating that these aspects in particular to be understood for successful inception and completion of collaborative activities. As more and more effort and funding is being channeled into international work and collaboration, and the number of participants in each of these activities increase, the role of the coordination also becomes more crucial. The three stages of the coordination and coordinators' role are significant findings with regards to management of projects, international or otherwise, potentially in a range of setup.

11.2.4 Would difference in linguistic and cultural backgrounds of the participants affect the way in which they approach and use online text-based communication medium for collaborative activity?

When people are working at a distance, as in the EU-India programme, it may be necessary to support them with technology for interaction and communication. My study addressed some of the socio-cultural aspects of using on-line technologies for collaboration in a cross-cultural setting. Participants from different cultural backgrounds preferred to use different technological communication media for interaction and communication. This difference in preference needs to be addressed and negotiated tools for communication have to be incorporated for successful collaboration between dispersed groups of participants.

Mixing different modes of communication, such as face-to-face and online communication channels, would enable a project to overcome the limitations posed by preferences in ICTs. In projects where tasks can be divided among participants and do not require frequent interaction even when participants are dispersed discussions can be centred on face-to-face meetings enabling the collaborative activity to progress rapidly. Even when there is a need for frequent interaction between dispersed participants, providing frequent face-to-face meetings would enable participants to overcome any restriction created by ICT preferences. Even though it might be expensive provisions for frequent face-to-face meetings should be incorporated in the project plan. Mixing different modes of communication would enable participants to maintain their motivation and the momentum of the activity.

The findings from this study on online communication for collaboration question the view that the text–based online communication tools such as email and discussion forums are widely used by academics across the world. Identification of the fact that different linguistic and cultural groups
may view and use text-based communication differently would assist management and participants in projects in setting up mechanisms for interactions that would be acceptable to all parties involved, which in turn would contribute towards successful collaboration. Furthermore it would also add towards understanding and dealing with misunderstandings caused by delays in response due to different usage patterns.

With regards to designing technology, this finding supports the need to design not only software but also hardware that would support the use of non-roman languages for on-line interaction and communication. This might enable these linguistic groups to use online technology as effortlessly as those who use Roman alphabets. Ease of use might encourage widespread use, enabling the creation of a culture of online communication.

For the research community, the findings reported in this study open up issues in the area of cultural aspects of language use and its impact on text-based communication.

The table below summarises the recommendations for tackling the major issues identified as impacting on the success of collaboration in cross-cultural projects.

<table>
<thead>
<tr>
<th>Personal goals</th>
<th>Working context</th>
<th>Coordination</th>
<th>Interaction and communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognize personal goals and incorporate them in the objective</td>
<td>Recognize different work practices of participants</td>
<td>Facilitate and mediate not Instruct</td>
<td>Recognize technological preference of the participants</td>
</tr>
<tr>
<td>Represent participants personal goals equally in the objective</td>
<td>Recognize different institutional cultures of participants</td>
<td></td>
<td>Support interaction through preferred medium of communication</td>
</tr>
<tr>
<td></td>
<td>Integrate project into the daily activities of the participants</td>
<td></td>
<td>Mix different communication modes and divide tasks and work around these different modes of interaction.</td>
</tr>
</tbody>
</table>
11.2.5 Effectiveness of the Activity systems model for the study of cross-cultural collaboration

Based on this study the interacting activity systems model proposed by Michael Cole for cross-cultural research is extended to the study of cross-cultural collaboration. In the extended activity systems model for cross-cultural collaboration, the newly created cross-cultural collaborative context is represented as a third activity system. The newly created cross-cultural collaborative activity system cannot exist in isolation, as the different working contexts of the participants would impact upon this new context and visa versa. Hence, it is incorporated into the interacting activity systems model. In order to be able to map the process of arriving at a shared objective and to recognise the complexity of simultaneous habitation of the participants in different contexts, a process model is incorporated into this model.

The model can be employed to map and study the components of cross-cultural collaborative activity, such as the different contexts, mediation, coordination and motivation, while recognizing the complexity of simultaneous occupation of actors in different cultural contexts and their impact on the various stages of the activity. This extended model provides the means for researchers to analyse the complex interaction that takes place in any cross-cultural collaboration.

From this study I have also proposed a process model which can be employed as a tool for management of cross-cultural collaborative projects. This process model makes it possible to predict and analyse the collaborative process from a management point of view, where the three different stages of human mediation and facilitation, conceptualisation and communication, conflict resolution and sustaining momentum and creating stability can be modelled for discussion and discussed. Managers and coordinators can employ this model to help them act as facilitators and mediators for inception and completion of successful cross-cultural or otherwise collaborative programmes.

11.3 Future work

The current study discussed in this thesis identified four factors that need to be addressed for successful cross-cultural collaboration. Furthermore, the interacting activity systems model proposed for cross-cultural research was extended to map cross-cultural collaboration. In this section, I present some of the issues that need to be studied further, such as preference for communication medium and culture, collaboration in different cultures, the characteristics of mediator/coordinator for cross-cultural activity and the proposed activity systems model for the study of cross-cultural collaboration.
11.3.1 Preferred medium of communication and cultural groups
One of the main issues that was raised is the preference of some groups for telephones as the medium of communication while the others preferred the use of text-based communication. Preference for one medium of communication over another was also reported in the study carried out by Pauleen and Yoong (2001) (as mentioned above in Chapter 2) where they suggest this preference might be attributed to culture. Further study needs to be carried out to investigate the relationship between preference of communication medium and technology. There were also differences in perceiving text-base communication as formal or informal by certain cultural groups. The reasons for this difference need to be studied to ascertain whether these are related to linguistic, cultural, or socio-political issues.

It should also be pointed out that the Indian participants in this study come from the capital Delhi and within India itself there are difference in language and religion and other aspects that lead to subtle variations in culture. There are differences, for instance, in the Gujaratis' and the Punjabis' approach to entrepreneurship. Hence it is important for people setting up collaborative work including Indian participants to carry out studies within India, across the various states and cultural differences to identify the aspects of cultural variations and its impact on the use of online technologies, and collaborative activity. This can be generalised, to address the differences in local culture within countries.

11.3.2 Culture and collaboration
As pointed out by Hofstede (2001) and Tayeb (1988) Indians display much greater respect for authority compared to the Europeans. They also point out that Indians do not like discussing issues with their colleagues, superiors or their subordinates. Since Hofstede' and Teyeb's studies were conducted in business organizations, studies need to be carried out to see whether it applies to academics in India, as it might have an impact on the very idea of collaboration. Collaboration seems to be a relatively new concept with the Indian academics and researchers in our study, and further studies need to carried out among these group of people to identify the factors for successful collaboration in this context.

11.3.3 Coordinator/mediator and culture
With regards to the role of the mediator for cross-cultural collaboration, the characteristics of an effective mediator have to be investigated further. As discussed in Chapter 10, the participants seemed to be more at ease with the researcher who did not come from any of the cultural or social systems of the participants in the programme compared to the coordinator who was a British Indian.
This raises questions such as whether someone from one community who is also assimilated in another community and is aware of both of the cultural and social systems would be a better mediator. Alternatively,

someone who is not part of either of the community might have a better understanding of the concerns and anxieties of the participants whom she is mediating. As discussed earlier in this chapter, further study has to be carried out to identify the characteristics of a successful mediator and or coordinator for cross-cultural communication and collaboration.

11.3.4 Testing the activity systems model for the study of cross-cultural collaboration

Since the cross-cultural collaborative activity systems model has been derived from the above study, it needs to be applied to various cross-cultural collaborative contexts to discern its robustness for the study of cross-cultural collaboration. Furthermore the process model proposed, as a management tool, also needs to be applied in a different context to more fully understand its capabilities.
APPENDICES

Appendix 1 - EU-India Economic Cross-Cultural Programme
List of Funded Projects and Project Preparatory Funds from the 1st Call for Proposals.

**Project No: 20**
Project Name: EU-India Business Network for Social Responsibility
Co-ordinator: European Institute for Asian studies (EIAS)- Brussels (Belgium)
Partners: Natural Resource Institute (UK)
Business and Community Foundation (India)
Assemblee Permante des Chambers De (France)
Total Amount: 496,320
EC Contribution: 325,420
Status: ONGOING

**Project No: 21**
Project Name: Entrepreneurship Training and Information Exchange for Small Businesses in India and Europe (ENTRIXIE)
Co-ordinator: Training 2000 Limited- Blackburn (United Kingdom)
Partners: Entrepreneurship Development Institute of India (India)
Bfi (Austria)
DAA (Germany)
Total Amount: 552,616
EC Contribution: 403,308
Status: ONGOING

**Project No: 28**
Project Name: EU-India International Business Management Centre for Cultural Institutions & Entrepreneurship
Co-ordinator: Scuola di Amministrazione Aziendale, Universita degli Studi di Torino (Italy)
Partners: EMPI (India)
HSEBA (Finland)
Total Amount: 365,300
EC Contribution: 254,000
Status: ONGOING

**Project No: 29**
Project Name: Indian European Ecodesign Programme
Co-ordinator: Delft University of Technology: CICAT, DUT Management Centre for International Co-operation- Delft (Netherlands)
Partners: Indian Institute of Technology – Delhi (India)
INETI (Portugal)
DUT (Netherlands)
Total Amount: 564,449
EC Contribution: 375,920
Status: ONGOING

**Project No: 30**
Project Name: A Centre of Excellence for University level Joint Applied Research in Management
Co-ordinator: Management Development Institute- Gurgaon (India)
Partners: Frasmus University (Netherland)
Delft University (Netherland)
Adaptation Ltd (UK)
Total Amount: 317,530
EC Contribution: 210,000
Status: ONGOING

**Project No: 31**
Project Name: EU-India Cross Cultural Innovation Network
Co-ordinator: University of Brighton- Brighton (UK)
Partners: GLS Institute of Business Management (India)
University of Technology -Aachen (Germany)
Institute per il Lavoro (Italy)
Delhi University-South Campus (India)
National Institute of Science and Technology (India)
Department of Technology and Social Science (Denmark)
Punjab Agricultural University (India)
University of Wales College Newport (UK)
Total Amount: 708,097
EC Contribution: 512,797
Status: ONGOING

**Project No: 34**
Project Name: MSC-IB
Co-ordinator: South Bank University - London (United Kingdom)
Partners: Mainz University of Applied Sciences(Germany)
Loyola College, Chennai (India)
Total Amount: 521,282
EC Contribution: 375,920
Status: ONGOING

**Project No: 35**
Project Name: EU-India Joint Environmental Education Programme
Co-ordinator: International Institute for Industrial Environmental Economics (IIIEE) at Lund University- Lund (Sweden)
Partners: Environment Protection Training and Research Institute
The Netpem Trust (India)
University of Twente/CSTM (Netherlands)
Indian Institute of Technology – Mumbai (India)
Environment Protection Training and Research Institute (India)
Total Amount: 621,268
EC Contribution: 432,968
Status: ONGOING

Project No: 37
Project Name: Good Governance in Democratic Societies in Cross Cultural Perspective
Co-ordinator: Indian Institute of Management Calcutta (India)
Partners: London School of Economics (UK)
Humboldt University (Germany)
Fredrich Schiller University (Germany)
SAA (Italy)
ASSSR (Netherland)
Total Amount: 128,000
EC Contribution: 84,000
Status: ONGOING

Project No: 12
Project Name: EU-India Media Meeting Point: Cultural Exchanges, Training & Consultancy Services
Co-ordinator: Master Europeo in Gestione di Impresa Cinematografica e Audiovisiva (MAGICA) - Rome (Italy)
Partners: United Media Associates (UK)
Millennium Films (India)
Total Amount: 489,199
EC Contribution: 353,088
Status: CLOSED

Project No: 14
Project Name: Indo-European Exchange of Ideas through BIBLIO
Co-ordinator: APCA (India)
Partners: CASA-ASSSR- Amsterdam (Netherlands)
Indice (Italy)
Total Amount: 120,000
EC Contribution: 96,000
Status: CLOSED

Project No: 15
Project Name: Images in Social Change Network - Jandarshan
Co-ordinator: Marker Ltd - London (UK)
Partners: Jandarshan/Deshbandhu (India)
IWF Knowledge and Media (Germany)
Sheffield Independent Film (UK)
Total Amount: 499,982
EC Contribution: 382,046
Status: CLOSED

**Project No: 16**
Project Name: EU India Radio and TV Journalists' Training  
Co-ordinator: The Thomson Foundation-Cardiff (UK)  
Partners: CBA (UK)  
Prasar Bharti (India)  
Radio Nederland Training Centre (Netherland)  
Integri TV (India)  
Total Amount: 629,841  
EC Contribution: 253,154  
Status: CLOSED

**Project No: 17**
Project Name: Europe this Week  
Co-ordinator: Asia-Pacific Communication Associates-APCA (India)  
Partners: Domino Productions (Belgium)  
AESSE Video ARL (Italy)  
Total Amount: 135,266  
EC Contribution: 101,600  
Status: CLOSED

**Project No: 18**
Project Name: Entrepreneurship Inculturalisation: Networking for Global Opportunities & Development in Austria, India & Italy  
Co-ordinator: The Indo-Italian Chamber of Commerce & Industry- Mumbai (India)  
Partners: WIFI (Austria)  
Maharashtra Centre for Entrepreneurship Development (India)  
Formpaper (Italy)  
Total Amount: 652,524  
EC Contribution: 427,774  
Status: CLOSED

**Project No: 22**
Project Name: Innovative University-Industry Engineering Link and Enterprise Culture Project (EU-IN MANTECH)  
Co-ordinator: Politecnico di Torino (Italy)  
Partners: FATA Hunter (Italy)  
CII (India)  
IIT Delhi (India)  
Chambre de Commerce et Industrie de Quimper (France)  
Total Amount: 591,753  
EC Contribution: 448,000  
Status: CLOSED

**Project No: 25**
Project Name: Allied Team to Manage EuroIndian Relationships (ATMAN)
Co-ordinator: GAIA - Association of Electronics and the Information Technology Industries of the Basque Country- San Sebastian (Spain)
Partners: APCE (Italy)
APM (Portugal)
TEMA (India)
3SEI (India)
Total Amount: 995,081
EC Contribution: 476,390.75
Status: CLOSED

Project No: 27
Project Name: Europe and India: Past, Present and Future
Co-ordinator: Societa Indologica "L.P. Tessitori"-Udine (Italy)
Partners: B M Birla Science Centre (India)
OFPZ – Arsenal (Austria)
International Centre for Mechanical Sciences (Italy)
Total Amount: 337,110
EC Contribution: 261,185
Status: CLOSED

10 Project Preparation Fund
Project No: 200
Project Name: BridgeNET-Multipurpose Media Development for Broadcasting & Multimedia Publishing on News & Current Affairs of Common Interest
Co-ordinator: Chitra Utsav Video Private Ltd (India)
Partners: APRAD (India)
Tweedle Music s.r.l. (Italy)
ICON (Greece)
IPALMO (Italy)
Total Amount: 12,500
EC Contribution: 10,000.00
Status: CLOSED

Project No: 201
Project Name: JONES (Joint-Research of an on-line network of Electronic Commerce Services)
Co-ordinator: Belgavox s.a. (Belgium)
Partners:
Total Amount: 20,560
EC Contribution: 10,000.00
Status: CLOSED

Project No: 204
Project Name: India and Europe: Visions of the Millenium
Co-ordinator: RAQS Media Collective (India)
Partners: Films de la Grande Ourse (France)
Development Education for Youth (Ireland)
Total Amount: 12,500
EC Contribution: 10,000.00
Status: CLOSED

**Project No: 206**
Project Name: Crossing the Border
Co-ordinator: Company Nadine Ganase (Belgium)
Partners: Satyajit Ray Institute (India)
Total Amount: 15,050
EC Contribution: 10,000.00
Status: CLOSED

**Project No: 224**
Project Name: First Euro-Indian World-Music Forum in India
Co-ordinator: Trans Europe Halles (France)
Partners: Kawa Music Pvt Ltd. (India)
Sarai Media Lab (India.)
Total Amount: 12,532
EC Contribution: 10,000.00
Status: CLOSED

**Project No: 227**
Project Name: Euro India Centre for Business and Culture Synergy
Co-ordinator: Cemex Investment & Services Pvt. Ltd (India)
Partners: HEC School of Management (France)
Heidelberg University (Germany)
Total Amount: 15,500
EC Contribution: 10,000.00
Status: CLOSED

**Project No: 229**
Project Name: EU-India Developoment Studies Interaction with Focus on NGOs
Co-ordinator: University of Bremen (Germany)
Partners: CDSA (India)
Third world Centre (Netherlands)
Utkal University (India)
Total Amount: 9,116
EC Contribution: 7,200.00
Status: CLOSED

**Project No: 231**
Project Name: Towards a Sustainable Plastic Cycle in India
Co-ordinator: IVM, Vrije Universiteit (Netherlands)
Partners: National Council for Applied Economic Research (India)
Total Amount: 12,500
EC Contribution: 10,000.00
Status: CLOSED

**Project No: 235**
Project Name: Remagi - Technique & Technology Exchanges for Reabilitation with the Market Globalisation EU India
Co-ordinator: ANNA University (India)
Partners: COMIPA (Italy)
University Otto Von Guericke (Germany)
I.LI. TEC (Italy)
Bari University (Italy)
Total Amount: 12,420
EC Contribution: 10,000.00
Status: CLOSED

**Project No: 236**
Project Name: Gender Sensitive SME Development in Forest Based Livelihood Systems in North, North-East and West India
Co-ordinator: AERDD, The University of Reading (UK)
Partners: University de Torres-os-Montes e Alto Douro (Portugal)
Goa University (India)
CCS Haryana Agricultural University (India)
North Easter Hill University (India)
Total Amount: 14,694
EC Contribution: 10,000.00
Status: CLOSED
Appendix 2 - TeamRoom

An example of the TeamRoom environment provided as a private space for interaction and communication for Computer Science and Floriculture projects can be seen below:

Note: The “Computer Science” project was initially called “Networking”
### Appendix 3 - Table on the projects, participants and the institutions

A summary of the identified project, the participants involved and the institutions they are attached to is presented as follows:

<table>
<thead>
<tr>
<th>Participants</th>
<th>Working Institutions</th>
<th>EU-India programme's projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Names</strong></td>
<td><strong>Roles</strong></td>
<td><strong>Name</strong></td>
</tr>
<tr>
<td>Ragu</td>
<td>Professor</td>
<td>UoB</td>
</tr>
<tr>
<td>Arun</td>
<td>Honorary Director of IIC</td>
<td>DU</td>
</tr>
<tr>
<td>Kalyani</td>
<td>Senior Researcher</td>
<td>NISTADS</td>
</tr>
<tr>
<td>Daniel</td>
<td>Head of Research and Enterprise and Senior Lecture</td>
<td>UWCN</td>
</tr>
<tr>
<td>Ajith</td>
<td>Systems Manager and Lecturer</td>
<td>DU</td>
</tr>
<tr>
<td>Joe</td>
<td>Senior Lecturer</td>
<td>UoB</td>
</tr>
<tr>
<td>Raja</td>
<td>Director</td>
<td>NISTADS</td>
</tr>
<tr>
<td>Daniel</td>
<td>Head of Research and Enterprise and Senior Lecture</td>
<td>UWCN</td>
</tr>
<tr>
<td>Kalyani</td>
<td>Senior Researcher</td>
<td>NISTADS</td>
</tr>
<tr>
<td>Leo</td>
<td>Associate Professor</td>
<td>DTU</td>
</tr>
</tbody>
</table>
Appendix 4 - Research and technological capabilities of the case study participants’ institutions

Brief account of the research and technological capabilities of the institutions of participants’ case study participants discussed in this thesis are presented below.

**Europe**

University of Brighton

The University of Brighton’s Faculty of Computing and Management sciences has a strong research tradition. Below, the research and technological capabilities of the faculty is presented.

**Research**

The School of Computing, Mathematical and Information Sciences has a number of research groups under areas of Computing and Mathematical Science, Information and Communications, Interactive Technologies, Social and Educational Application of Knowledge Engineering (SEAKE) Centre and Social Informatics Research Unit. (University of Brighton 2002)

The research area of Information and Communications addresses themes such as Social Informatics, Visual Information Retrieval, Interactive System Design Methods and Digital Learning Technologies. Digital Learning Technologies research theme has a number of staff working in the area of software development for learning, particularly the design and evaluation of distributed and collaborative learning systems (University of Brighton 2002).

Social Informatics theme comprises the research units of Social informatics Research Unit, Innovation and Human Centred Systems and Community Informatics. The School of Computing, Mathematical and Information Sciences is engaged in the fostering of innovative human-centred applications of Information technology via the Human Centred Systems network. The Human Centred Systems network resides in the SEAKE Centre and is involved in the EU-India programme (University of Brighton 2002).

**Technology**

The University of Brighton School of Computing, Mathematical and information Sciences has its own server and a floor dedicated to around 100 computers providing students with access to the Internet. Students have an email account and are given Web spaces. Most interaction and communication between students and the lectures tend to take place over emails or news groups. In
some modules the lecture notes, reading lists and tutorial questions are posted on the dedicated web site and the students are encouraged to use it. The students are also encouraged to set up their own homepages where they could display or try out what they have learnt.

The British Universities have a dedicated Network- Joint Academic Network (JANET) for their Internet access. This allows the net traffic to be faster than the traffic flow through private Internet Service Providers (ISPs).

University of Wales College, Newport
University of Wales College, Newport’s School of Art and Design hosts centres to facilitate research and this is supported by a state of the art technology. The research and technological capabilities of the School is presented below.

Research
The School of Art and Design, has two applied research and enterprise centres, namely Fusion and International Film School, Wales which “aim to support and develop the regional economy by making the expertise of the School more widely available. Fusion carries out research in the areas of design, art and creative use of new media. In addition, the School of Art and Design have links with European partners and have been involved in planning and developing research projects “ranging from social innovation to the development of advances on-line musical education”(EU-India Cross- Cultural Innovation Network, 1998 p: 33).

The University also hosts the Centre for Advanced Inquiry in the Interactive Arts (CAiiA) which carried out research in the field of interactive media and electronic arts.

Technology
The University has its own server linking the entire college and has access to the Internet through the JANET service. The School of Arts, Media and Design has its own networked computer suite which is accessible for students for their communication and academic needs. The school has a large number of individual computer workstations, mainly Apple Macs, available for general student use. They have up to date versions of software packages and enable students to use the world wide web, produce written work, undertake projects, research and to prepare presentations. Since it is an Arts and Media design school, the school also has a number of studios for filmmaking, photography and animation. These high tech media suites give the students the facility to create media, and Internet productions with digital editing and animation.
Technical University of Denmark (DTU), Lyngby

Like the British Universities, Technical University of Denmark, Lyngby too has a strong research tradition. Below the research and technological capabilities of the University is presented.

Research

The research of the department includes both basic and applied research. The basic research deals in particular with the interaction between cultural, societal, working environmental and technological changes and the effect of human activities on the development of these areas. The research profile of the Department of Technology and Social Sciences includes the following themes:

- Research into the driving forces of technological change, the cultural and institutional contexts for technological choices and the ethical, economic, social, working life oriented and environmental consequences of technological change.
- Research into the development of competencies, innovation, management and planning in enterprises, public institutions and interested parties and their interrelations.
- Research into user and citizen participation in the planning and development of technology, working environment and environmental questions in enterprises and local communities.
- Research into engineering competencies including philosophical, ethical and work organizational aspects and aspects concerning theories of knowledge in engineering work related to the development of new technology. (Technical University of Denmark: http://www.adm.dtu.dk/fakta/index_e.htm accessed Jan 2002)

The research environment is part of a comprehensive national and international research network. It has also established collaborative relations with foreign universities and institutes concerned with cleaner technologies, technology and everyday life, technology assessment, action research, women and technology, and socio-technical system design. Investigation of the cultural and social factors of the shaping of technology in developing countries is part of the research as well as analyses of institutional sustainability of Danish development aid projects.

Technology

The University aims to utilize information technology for internal and external information and communication services. A number of services have been set up for University students and employees. All students have a personal account with the University's computer laboratory system, which includes an e-mail address and home page option. University computer facilities are divided up into three main systems: the computer laboratory system, the DTU Network and the individual local area networks (LANs) of the University's various departments. The University's departments independently choose and operate their own Local Area Networks.
There are six computer laboratories on campus for use twenty-four hours a day all year round. The labs were primarily established in response to the educational needs of the sector in which they are located, so they differ with respect to both equipment and installed applications. All University students have full access to all lab facilities from any workstation with Internet access. The computer lab system is linked up to a modem pool to enable Internet access via the telephone network. The Denmark Technical University Network is operated by three Cisco-routers type 8540. The routers are connected through 1 GBit/s ethernet. The computer laboratories and the departments have as required connections of 1 GBit/sec., 100 MBit/s or 10 MBit/s ethernet. (Technical University of Denmark: http://www.adm.dtu.dk/fakta/index_e.htm accessed Jan 2002)

India

Delhi University

The Delhi University unlike the Universities presented in this study is a large university comprising of 83 colleges. The Institute of Informatics and Communication is a newly established institution at the South Campus of the Delhi University.

Even though, the Institute of Informatics and Communication (IIC) is mainly involved in computing and technology, the universities Computer Science department is located at the other of Delhi City. While the Institute of Informatics and Communication is situated in the South Campus, the Computer Science Department is situated in the North campus. The latter is at least a 45 minutes drive from the South Campus. The university is still learning about the new technologies as the technology is being introduced slowly into the higher education institutes in the last few years. Since the institute is new it has the task of educating the administration and other members from various departments in the university on computer software and requirements. The IIC is setting up the departments to cater for the web server service to the university as currently this small new institute is trying to provide services to the entire Delhi University community. The research and technological capabilities of IIC is presented below.

Research

The University of Delhi is research active, and has worked extensively on international collaborative projects. The Institute of Informatics and Communication is a fairly new institute and they are in the process of building a research profile for the institute. Participation in the EU-India programme is one of many ways to build that research profile.
Technology

The Institute has a dedicated computer pool with their own server. The Internet link in India, though fast improving, is still very limited. The bandwidth the Institution relies on is currently between 64 kilobits per sec to 128 Kilobits per sec. This has limited the use of emails by the students and lecturers. The Institution also has to endure unstable power supply affecting the computer networks. Since the technology is new to the Institution, there have been problems with the email server. As a result, students and lecturers have web-based email addresses. The Institute’s web server space is also limited.

National Institute of Science Technology and Development Studies (NISTADS)

Unlike the institutions presented above, NISTADS, is a research institute. Below the research and technological capabilities of the institution is presented.

Research

The main activity of the institute is to carry out research in various socio-economic areas and to influence policy making in those areas.

The research activities of NISTADS are grouped under broad programmes:

- Technological assistance to rural artisans (TARA)
- Focus on ecology and economic development (FEED)
- Industrial and technological policy studies
- Science and technology in the globalization era with emphasis on developing a composite third world perspective
- Knowledge management and innovation studies
- Scientometrics and mathematical modeling
- History, sociology and philosophy of science
- Public understanding of science

The research institution gets involved in research projects in a number of ways. The government ministry may commission the institution to study a particular scenario or a research programme may be proposed through an agency. The researchers through his own initiative can also undertake research projects. Funding for the research activities in the institution is obtained through government ministries, private companies and other agencies. Here the researcher or the institution would approach a funding agency and submit a proposal. Funding may also be obtained through the ministry or industry, which wants a particular problem to be investigated.
Technology
NISATDS has a server set up with all the members of the faculty having access to emails and the World Wide Web. While senior faculty members share their offices with one or two other senior members, the others share an open plan office where most members have a computer on their desks with Internet access. Researchers from the Institution who are participants of the EU-India Cross Cultural Innovation Network project use the in-house Internet access when they are at work and rely heavily on the technological facility provided by the Institute. Overall the technology provided by the Institute is seen as adequate by the researchers. Compared to the rest of the country, according to the participants, the technological capability of the institution is much better.

The technology had become available to the Institution in the late 90’s but has become available to all in the office only in year 2000. Until that time the entire office, which accommodates around ten to fifteen researchers shared one or two computers to access emails and the web sites.

The senior members who share an office have their own computers on their desks although they share a computer between them to access the Internet and the local network. The number of people sharing an office would be around two or three. The senior researchers, depending on the projects they are involved in, have secretaries to check their emails and respond to them. The researchers, while having an institute’s email address, also have web-based email addresses. When the EU-India Cross Cultural Innovation Network project was set up, NISTADS was just planning to connect to the Internet. The first few months of the EU-India Cross Cultural Innovation Network project the institute had to deal with a lot of network disruptions and as a result the email communications with the participants were limited. Following this the participants from the institution registered with web based email services.

After a year of setting up the EU-India Cross Cultural Innovation Network programme, NISTADS was trying to launch its’ own web site and had requested information from the project’s main coordination centre situated in Brighton, UK. The coordination centre suggested that the research institute should approach University of Delhi, South Campus and seek training on web-authoring software. NISATDS did not pursue this collaboration with Delhi University; instead it built its own web site and launched it at the end of the second year of the project (2000-2001).
Appendix 5 - Short Biographies of the participants involved in this study

The main coordinator

- **Name:** Ragu
- **Institution attached to:** University of Brighton (UoB)
- **Role:** Professor in Human Centred Systems
- **Role in the EU-India programme:** Main Coordinator

Ragu is the founding director of the SEAKE Centre at the University of Brighton and is the Professor of Human Centred Systems. He completed his MA in Mathematics at the University of Punjab, India. He obtained a MSc in Applied Mathematics and MSc Computer Science from the University of London and DPhil in Applied Sciences from the University of Sussex. He has coordinated a number of European and international R&D networks in postgraduate education and applied research, including the European (ERASMUS, SOCRATES) postgraduate education and doctoral training network in Human Centred Systems; international Research Institute in Human Centred Systems and Europe-Japan human centred systems. He also has involvement with international and European projects on Culture Language and Artificial Intelligence (COST-EC); Impact of Expert Systems in Production and Services on Qualifications and working life (ILO) AND Human Centred CIM Systems (ESPRIT, EC); European R&D programme on Anthropocentric Production Systems (EC); Sustainable competitive Change for European SMEs (DTI, UK); the EUROTECNET (EC) study on Emerging Patterns of Qualifications and Learning in Modern Manufacturing Industries, and WORK PLACE study (BRITE, EU).

Ragu prepared the proposal for the EU-India Cross cultural Innovation Network programme to submit to the European Union for funding under the EU-India Economic programme. It was he who identified the participants for the programme. This was mainly done through his acquaintances and from the Human centred systems network and SEAKE centre group. He also identified participants through his acquaintances from past activities.

The Indian coordinator

- **Name:** Arun
- **Institution attached to:** Institute of Informatics and Communication (IIC), University of Delhi South Campus (DU)
- **Role:** Honorary Director of IIC
- **Role in the EU-India programme:** Indian Coordinator
Arun is attached to the University of Delhi, South Campus as Honorary Director of the Institute of Informatics and Communication (IIC). He completed M.Sc. (Physics) at University of Lucknow and his Ph.D in Theoretical Physics from Delhi University. Arun was a Commonwealth Fellow of the University of Bristol (UK) in the early seventies. He was Reader in Physics at Delhi University and Director, Department of Science & Technology, Government of India. He was the director of the National Institute of Science, Technology and Development Studies (NISTADS), a research laboratory of CSIR.

His research publications are in the area of science technology and society studies, and he has written books relating to Science, Technology and Society. He is a member of a number of international expert groups as well as a number of international professional bodies. Arun is widely recognised in the research area of Science Technology Society Studies. He is dedicated to the interaction between science and society, and has participated in projects which improve the quality of life with technological change. Arun is also a member of the Human Centred Systems and Ragu had identified him as one of the nine participants when the EU-India Cross Cultural Innovation Network programme was set up.

**European Participants**

Participants from the University of Brighton

- **Name:** Joe
- **Role:** Course Leader and Senior Lecturer
- **Attached to project(s) in EU-India programm:** Computer Science Project

Joe obtained a degree in Philosophy at the University of Sussex and a MSc in Information Systems degree from the university of Brighton. He also obtained his Ph.D. in the area of self-organisation in network-based learning systems, trying to find ways of enabling new forms of collaboration and communication between learners using the Internet. He teaches networking and Web technologies at the University of Brighton, UK. His research interest lies in the area of network-based learning. He also identifies interests that include cross-cultural collaboration, educational systems and complexity and metadata. Joe is a course leader for the distance-taught foundation degree in eSystems Design & Technology, as well as teaching/leading modules on networking, the Internet, uses communications technology to undergraduate and postgraduate levels. Before joining the
University of Brighton as a lecturer Joe used to be the Academic Support Manager for the University's Faculty of IT network.

He is a member of various learning technology groups and committees at the University. He is also a member of the Institute for Learning and Teaching and the Association for Learning Technology. Joe is interested in learning technologies and collaboration

Joe joined the EU-India cross cultural innovation Network programme after his participation in the September conference in 1999 organised by the programme and hosted at the University of Brighton.

- **Name:** Vy
- **Role:** Research Student
- **Role in the EU-India programme:** Research Assistant

Vy obtained a general degree with English, Linguistics and Economics, from the University of Jaffna, Sri Lanka. She obtained an MA in Contemporary Approaches to English Studies from Goldsmith’s College, University of London and an MA in Media Assisted Language Teaching from the University of Brighton. Vy joined the EU-India Cross Cultural Innovation Network programme as a Research Assistant. She had set up on-line tools to support interaction and communication among the participants in the programme. Worked as a member of a web site design, which designed the programme’s Web site. Now she maintains the Web site for the programme. Vy is interested in collaboration and the use of online technologies for collaboration in a cross cultural environment.

Participants from the University of Wales College Newport

- **Name:** Daniel
- **Role:** Head of Research and Enterprise and Senior Lecturer.
- **Projects in EU-India programme:** Floriculture Project and Bankura Project

Originally educated as a marine biologist, Daniel has followed a career track which has included researching fish physiology, lecturing in a Polytechnic, teaching biology in UK schools, digging on archaeological sites and heading up the Centre for Evaluation of IT in Education at the National Foundation for Educational Research. (Web)
In 1995, Daniel joined the then Newport School of Art and Design as Course Leader, to design and set up new undergraduate and postgraduate courses in Multimedia. He is now Head of Research and Enterprise in the School of Art, Media and Design, University of Wales College Newport. He is responsible for the School's Applied Enterprise Centre, and is involved in a range of consultancies and applied research projects. He has published widely in both conventional and multimedia formats. Daniel lists his areas of expertise as Multimedia Knowledge Engineering, Media-based distance education and training, Human-centred systems research and development and Cross-cultural communication. (Web).

Daniel is a member of the Human Centred Systems group assembled in early 1980’s where the EU-India Cross Cultural Innovation Network programme co-ordinator, Ragu is also a member. He is also member of the SEAKE Centre, which was founded by Ragu. Daniel came to be identified as one of the nine main participants by Ragu in the EU-India programme was through the links that had been maintained through the Human centred systems and SEAKE Centre network.

Daniel is interested in tacit dimension of knowledge and knowledge transfer. He is also interested in multimedia knowledge archiving.

Participants from the Denmark Technical University

- **Name:** Leo
- **Role:** Associate Professor
- **Attached to project(s) in EU-India programme:** Dairy Project

Leo obtained a Master degree of Sociology from University of Copenhagen. He is an Associate Professor in the Institute of Social Sciences, Technical University of Denmark (TUD). Since 1987, he has been Coordinator of interdisciplinary project: 'Production and Qualification'. He was also one of the initiators of 'The Interdisciplinary Centre' at the Technical University Denmark. He coordinated the Danish part of the project: 'Human Centred CIM and the Danish Council of Technology. Leo also coordinated the Danish part of the project: 'Prospects of Anthropocentric Production Systems in Denmark'. He has been the local coordinator of the European postgraduate studies and research network in human centred systems (ERASMUS, SOCRATES). He is a member of 'The International Advisory Board' of SEAKE CENTRE, Brighton, participating in a common approach regarding 'Models for the Design of Sustainable Industrial and Social Systems'. Since 1993, he is a member of Advisory Board of AI & Society.
Leo teaches postgraduate students action research and applied research. He states his main field and interest as conceptual understanding and historical analysis of the relationship between culture, organization and learning. His publications have been on development of qualifications in the industrial sector, industrial culture, different knowledge paradigms and culture and learning. Leo works with methods like scenario analysis, metaphor analysis and ideal type concepts. (University web site)

Leo was introduced to the EU-India programme through the network that existed on the Human Centred Systems group and the SEAKE centre.

**Indian Participants**

Participants from the Delhi University, South Campus

- **Name:** Ajith
- **Role:** Systems Manager and Lecturer
- **Attached to project(s) in EU-India programme:** Computer Science Project

Ajith obtained his BSc and MSc in Physics with Electronic from Meerut University, Meerut, India. He completed his Ph.D. (Electronics) from Optical Communication, Department of Electronic Science, Delhi University (South Campus), New Delhi, India. He joined the Institute of Informatics and Communication in 1998 as the systems manager. Five years of his joining the institute he has been teaching networking technologies to postgraduate students in the institute. His research interest is in the areas of Computer Networks, Teaching and Learning Technologies.

Ajith’s interest lies in the area of computer networks, learning technologies and collaboration. For the last five years Ajith has been working in the field of computer networks and learning technologies along with the designing the networks for various departments of the University. He is also working on a collaborative mode of teaching and learning technologies/methodologies. Ajith has set up an innovative IT enabled teaching and learning system in the area of Networking Technologies, at the Institute of Informatics & Communication.

Ajith is a Convener of the Campus wide Networking Committee, University of Delhi South Campus. He is also a member of, Project Advisory Committee, Department of Scientific and
Industrial Research, Ministry of Science and Technology, Govt. of India and an expert member, Internet Committee, NISSAT, Govt. of India. Ajith is recognized as an Expert Member, Internet Committee, Indian Council for Social Science Research. He is also a member of the feasibility committee for restructuring the undergraduate programmes, at the Delhi University. In the international scene Ajith is a member of the Association of Learning Technologies (ALT), UK.

Ajith has published in national and international academic journals. He was introduced to the EU-India Cross Cultural Innovation Network programme by Arnn the India coordinator of the EU-India programme.

Participants from the National Institute of Science, Technology and Development Studies

- Name: Raja
- Role: Director of NISTADS
- Attached to project(s) in EU-India programme: Bankura Project

Raja joined the National Institute of Science, Technology and Development Studies, as the director in 1999. As the director he has overall responsibility for academic guidance, coordination and management of this multi-disciplinary research institute consisting of 48 scientists. The research areas of NISTADS include history and philosophy of science, technology and social change, sociology of science.

Raja obtained his MSc in Physics and his Ph.D. in Astrophysics from the Punjab University, India. He identifies his research area as Astronomy and astrophysics; history of science; science policy; science education. He has published widely on subjects ranging from astronomy, education in India during British Empire and technology and society. Raja is interested in technology and social change and art history.

Since Arnn leaving the research institute, another participants from the institute was identified as the main participant representing the institute in the EU-India programme. Ragu was introduced to the EU-India Cross Cultural Innovation Network programme when he became the Director of the research institute. As the director he knew about the activities of the programme and the institutes commitment but he became involved in the programme as a collaborative partner after hosting one of the workshops for the programme in India.
Name: Kalyani
Role: Senior Researcher
Attached to project(s) in EU-India programme: Floriculture Project and Dairy Project

Kalyani has a doctoral degree in Plant Tissue Culture from University of Delhi and currently she is working as a senior scientist in the National Institute of Science Technology and Development studies. She had taught botany to graduate students in Delhi University before joining the research institute in 1987. She has been working in the research institute for around fifteen years and during this time she has been working on a number of projects undertaken by the research institute. She was one of the first people in India to work on tissue culture in the late eighties and early 90's. Kalyani identifies technology and social change as her research area. She has worked in various sectors like biotechnology and tissue culture, seri culture (silkworm rearing) and floriculture. She has published her research on various journals and reports within India and Internationally. She has also worked in a consultancy capacity for a number of sponsoring agencies in the number of sectors that she has been working on (EU-India publicity document). Kalyani had acted as mediator and negotiator between the government officials and her research subject to bring about positive change to the sector she has been studying.

Kalyani was introduced to the EU-India programme through the former Director of NISTADS and the programme's Indian coordinator, Arun.
Appendix 6 - Sample questionnaire

EU-India questionnaire (no.1) on the use of communication tools for collaboration.

A. Please give a brief description of up to three recent projects which involved collaborating with other participants

Project 1 (in around 100 words)

Project 2 (in around 100 words)

Project 3 (in around 100 words)

B. Now, please tell us about each of the projects in more detail.

Project 1:
Could you please give us a brief description (in around 200 words) as to how you got involved in the project?

1.1. Did you work with anyone in your institution?

1.2. Did you work with anyone outside your institution in your own country?

1.3. Did you work with anyone overseas?

1.4. Did you work face-to-face?
If so, how often did you meet
1.4.1. With colleagues in your institution?
1.4.2. With colleagues outside your institution in your own country?
1.4.3. With colleagues overseas?

1.5. How did you communicate?

1.5.1 with colleagues in your institute (please indicate with a cross “X” next your selection)-

a. Telephone, fax,
b. letters,
c. at conferences/workshops,
d. at formal meetings,
e. at informal meetings,
f. other- please specify

1.5.2 With colleagues outside your institution in your own country (please indicate with a cross “X” next your selection) -

a. Telephone,
b. fax,
c. letters,
d. at conferences/workshops,
e. at formal meetings,
f. at informal meetings,
g. other- please specify

1.5.3. With colleagues overseas (please indicate with a cross “X” next your selection) -

a. Telephone,
b. fax,
c. letters,
d. at conferences/ workshops,
e. at formal meetings  
f. at informal meetings, 
g. other- please specify

1.6. Did you use any computer mediated communication tools?
1.6.1. If so, did you use (please indicate with a cross “X” next to your selection):
   a. Personal emails  
   b. Video conferencing  
   c. Chat  
   d. Other computer mediated communication tools (for e.g. mailing list/discussion forum/bulletin board) –please describe

1.6.2. Where were these computer mediated communication tools on? (please indicate with a cross “X” next to your selection)
   a. Computer on your desk in your office  
   b. Shared computer in your office  
   c. Computer at home  
   d. Computer in the Computer suite  
   e. Computer in your secretary’s office  
   f. Other (please specify)

1.6.3. How often did you use (state using the following keys: A- Always, S- Sometimes, R- Rarely)
   a. Personal emails  
   b. Video conferencing  
   c. Chat  
   d. Other computer-mediated tools (for e.g. mailing list/discussion forum/ bulletin board) – please describe
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