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Aparna Purushothaman

EMPOWERING WOMEN THROUGH LEARNING TO USE THE INTERNET

An Ethnographic Action Research Project To Address The Second Order Digital Divide

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APARNA PURUSHOTHAMAN

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Aalborg, Denmark, 2013

Empowering Women Through Learning To Use The Internet – An Ethnographic Action Research Project To Address The Second Order Digital Divide

This Thesis is developed within:

Doctoral Program	*Human Centered Communication and Informatics (HCCI)*
Research Group	*E-learning Lab, Center for User Driven Innovation, Learning and Design*
Department	*Department of Communication & Psychology*
University	*Aalborg University*
Supervisor	*Lone Dirckinck-Holmfeld*
Co-supervisor	*Heilyn Camacho*

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Dedicated to

Prasanth & Dhwani

For the love and support which made it possible for me to sail across the journey of my PhD life

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ABSTRACT

Information and communication technology plays a crucial role in the social, economic, and cultural development of a country. Of all the ICTs, the Internet is the tool that has touched upon all aspects of life. Thus, there is an increasing need for digital content and networking skills. The Internet has brought substantial changes to the ways people communicate and how information is exchanged across the globe, making it difficult for people to function without it in this new information age. One of the sectors that has been immensely influenced by the growth of the Internet is education. Around the globe, educational institutions are taking advantage of the benefits of this powerful technology to make learning more effective to prepare students for the knowledge economy. While the developed economies are reaping the benefits of the new information age, the developing economies still have a long way to go to make the benefits of Internet and other ICTs widely available for its citizens, including students. While the fortunate are able to take advantage of the unlimited repository of information, many are left behind in the information revolution, thus creating a digital divide between the developed and the developing nations and within nations in terms of ICT, computer, and Internet adoption and usage.

There are two factors that make access to the Internet difficult for individuals in developing regions and that create two orders of divide. The first order divide arises because of physical and infrastructural difficulties, and the second level divide arises because people do not make use of the available Internet services. Those who are the most severely affected by the digital divide and thus face barriers in participating in the knowledge economy are women from the developing regions.

The overall aim of this research is to empower Indian women students through the use of the Internet. To address this issue, I posed three research questions:

- What are the barriers which constrain women to access Internet in a developing country context?
- How can women be empowered through learning to use the Internet?
- What are the issues that need to be considered when designing learning to use the Internet by women users intended for their empowerment in a developing country context?

Since these questions involve the complex interplay of ICT, gender, and culture, the research used a mixed-methods approach. The research intervention was done at the Department of Women's Studies, University of Calicut in Kerala, India. The participants of the research were twelve masters students who were all women. Ethnographic action research was the research methodology adopted. It was employed to determine what keeps women away from the Internet and which strategies to use in order to empower women through becoming Internet participants. Ethnography provided an understanding of the rich and complex socio-cultural environment and the gendered role definitions that influenced Internet usage. Ethnography also facilitated an understanding of the perceptions and the values, beliefs, and attitudes of women toward the Internet.

Action research helped to build a project that facilitated learning to use the Internet, using the core principles of plan, do, observe, and reflect. The research was based on a real-world situation and focused on change, the empowerment of women. Action research facilitated achieving this aim as it helped to bring the desired change through the intervention that the research demanded and helped in documenting the empowerment that occurred in the women who learned to use the Internet.

The intervention design was unique and comprised a "future workshop", four Internet training sessions, four action research workshops, and an evaluation workshop. The "future workshop" was designed to learn from the students what problems they faced in using the Internet and what the possible solutions may be. Internet training introduced the students to Internet tools and applications that were selected based on the Bloom's Digital Taxonomy of learning domains (Churches, 2007, 2008). Action research workshops provided opportunities for students to share and reflect on their Internet learning experiences. This design facilitated more participation and involvement of the research participants than technically based training, usually seen in the Information and Communication Technologies for Development (ICT4D) context, could have done.

The research findings show that the barriers that the women faced in accessing the Internet were due to the first order and second order digital divide. Even though literacy and educational levels are a privilege in using ICT, it cannot be concluded that just because a woman is educated means that she accesses the Internet in the Indian context. The findings also revealed some unexplored areas of the second order divide in the ICT4D literature in the Indian context, such

as lack of knowledge and skills to use the available Internet services, technophobia, Internet self-efficacy, and a lack of motivation. The research also reveals that socio-cultural factors, for example, gendered role definitions, restricted mobility arising from time restrictions that constrained their access to public Internet cafes. The research finding regarding the barriers of Internet usage shows that a machine connected to the Internet does not signify development. Based on these findings, I recommend that apart from providing access to everyone, governments need to consider what strategies should be adopted to encourage people use the available Internet facilities. Another research finding is that women from a developing country context can be empowered through learning to use the Internet by creating a conducive and supportive learning environment. The research findings show that empowerment is a process that can be experienced as well as an outcome that can be measured.

Wenger's social learning theory was used to understand the process of empowerment. This helped in understanding how the women students identifies themselves with the Internet world and became Internet users specific to the context where the learning took place. The fundamental principle of Communities of Practice (CoP), which focuses on "belonging" rather than "ability," suited the research as the emphasis was on learning how to use the Internet and not about making the students experts in its use. The reflective skills that they gained in learning how to use the Internet are life-long skills and focusing on the content of the Internet is not as effective as the Internet is not a static technology.

The findings also show that the empowerment that took place can also be measured at the micro level. Empowerment indicators that take into account what empowerment means for the project participants can be used to measure the empowerment. The Measuring Empowerment Framework applied in this research facilitated not only the measurement of the indicators of empowerment developed for the research but also the determination of whether there were favorable opportunities available for the participants to use the acquired competencies and skills in Internet use in the future.

The research also proposed a design for learning the Internet for women users in a developing nation context based on the empirical findings and theoretical discussions of the study. The design was driven by a Human-Computer Interaction for Development (HCI4D) approach. The learning design created is novel to the field of HCI4D. The design stresses understanding the background of the research participants, their values and beliefs about the Internet, and why

the Internet is important for the participants. The research takes the position that Nardi and O'Day's (1999) work on technology use at the local level can be used to inform design for learning Internet in an ICT4D context.

The design is also based on the notion that learning to use the Internet in an ICT4D scenario should provide opportunities for the women participants to construct identities as Internet users. Based on the empirical findings, the research recommends that Wenger's (1998) learning framework can be used as a theoretical underpinning to facilitate this process of identity construction. Viewing learning as "becoming an Internet user" can make the learning more effective for the participants as they realize what they have missed out on by not being members of the Internet world and learn how to manage their multiple identities, which is at the core of what it means to be a woman in a specific cultural context. Thus, by constructing identities, the participants can develop a sense of belonging to the Internet world that motivate them to use the Internet after the developmental intervention. Based on the findings, another proposed element of the design is gender-sensitive training. The research uncovers the reasons for the need for gender-sensitive training and throws light upon the importance of women trainers training women to use the Internet or any ICT tool in a developmental context so as to bring effective outcomes.

The study brings new visions to policymakers, scholars, and designers in the field of ICT4D on how to do intervention-oriented research aimed at bridging the digital divide among women. The research fills the gap in the literature by introducing some of the novel elements of the second order divide and also provides new theoretical and methodological insights in the field. This research also throws light on how the theory of community of practice (CoP) can offer concepts to address the informal learning happening in ICT4D projects and open up new ways of making the training more effective from the designer's point of view and learning to use Internet or other ICT-based tools in a developmental context more effective from the participant's perspective. CoP has not been explored in the literature on empowerment. By combining the theoretical underpinning of the learning theory of CoP and empowerment, the research provides new perspectives on the application of theories for scholars in their studies of empowerment as a developmental goal. Another major area to which the research contributes is the application of action research methodology to a developing context. The facilitation of change through an intervention in action research is uncommon in the ICT4D literature. The research further demonstrates the need for a

greater focus on the second order divide in the field of ICT4D. Unless the second order divide is addressed, women especially will remain deprived and will not be able to reap the benefits of the information age in spite of ample access.

DANSK RESUME

Informations- og kommunikationsteknologi (IKT) spiller en afgørende rolle i et lands sociale, økonomiske og kulturelle udvikling. Af alle disse teknologier er internettet det værktøj, der berører flest af livets aspekter. Det betyder, at der er et stigende behov for digitalt indhold og kompetence til at navigere i indholdet, såkaldte netværkskompetencer. Internettets fremkomst har medført betydelige ændringer i måden, mennesker kommunikerer på og måden hvorpå information udveksles over hele verden, og det gør det vanskeligt at fungere som menneske uden internet i denne nye informationsalder. Uddannelsessektoren er særligt påvirket af internettets fremkomst, og uddannelsesinstitutioner verden over udnytter denne magtfulde teknologis fordele til at gøre læring mere effektiv samt til at forberede studerende på en fremtid i videnssamfundet. Mens de udviklede økonomier høster fordelene af informationsalderen, så er der stadig lang vej for udviklingsøkonomierne i forhold til at kunne tilbyde alle borgere, herunder studerende, fordelene ved internettet og anden IKT. Mens de heldige kan drage fordel af den guldgrube af information, der er tilgængelig på internettet, så er mange hægtet af informationsrevolutionen, hvilket har skabt en digital kløft mellem de udviklede lande og udviklingslandene og ligeledes inden for de enkelte lande med hensyn til IKT, computere og udbredelse og brug af internettet.

Der er nogle forhold i udviklingslandene som gør det svært for den enkelte at få adgang til Internettet, og det skaber to forskellige digitale kløfter. Den første kløft er opstået på grund af fysiske og infrastrukturelle problemer, mens den anden kløft er opstået, fordi folk ikke gør brug af de tilgængelige internettjenester. Kvinder fra udviklingslande har de største udfordringer i at deltage i vidensamfundet, og de er hårdest ramt af de digitale kløfter.

Det overordnede formål med dette forskningsprojekt er empowerment af kvindelige studerende ved at lære dem at bruge internettet. Gennem en undersøgelse af denne problemstilling søges følgende tre forskningsspørgsmål belyst:

- Hvilke barrierer forhindrer kvinder i en udviklingskontekst i at få adgang til Internettet?
- På hvilke måder kan kvinder opnå empowerment gennem at lære at bruge Internettet?
- Hvilke forhold skal reflekteres i design af læringsforløb i Internetbrug, som sigter mod empowerment af kvinder i en udviklingkontekst?

Eftersom disse tre spørgsmål involverer et komplekst samspil mellem IKT, køn og kultur, har jeg anvendt et forskningsdesign med blandede metoder. Forskningsinterventionen blev gennemført på Department of Women's Studies, University of Calicut i Kerala, Indien. Forskningsdeltagerne var tretten kvindelige kandidatstuderende. Den forskningsmetode, som jeg anvendte, var etnografisk aktionsforskning med henblik på at undersøge, hvad der afholder kvinder fra at bruge Internettet, og hvilke strategier der kan anvendes for at kvinderne kan opnå empowerment ved blive Internetbrugere. Etnografi bidrog til en forståelse af de mange komplekse sociokulturelle samfundsforhold samt de kønsbestemte roller, der påvirker internetbrug. Etnografi bidrog også til en forståelse af kvindernes opfattelse, værdier, overbevisninger og holdninger til internettet.

Aktionsforskning bidrog i forhold til at designe et projekt, der faciliterede læringsprocessen ved at anvende hovedprincipperne: planlægning, handling, observation og refleksion. Forskningen blev baseret på en situation fra den virkelige verden og fokuserede på forandring, nemlig empowerment af kvinder. Aktionsforskning faciliterede opnåelsen af dette mål, idet interventionen dannede grundlag for forandringsprocessen, og derudover blev metoden også anvendt til at dokumentere kvindernes empowerment-proces gennem det at lære at bruge internettet.

Interventionsdesignet var unikt for denne forskning og bestod af en fremtidsworkshop, fire internetundervisningsgange, fire aktionsforskningsworkshops og en evalueringsworkshop. Fremtidsworkshoppen var designet til at få de studerende i tale omkring hvilke forhindringer de stødte på i forbindelse med at bruge internettet, og hvilke løsningsmuligheder de kunne se. I internetundervisningen blev de studerende introduceret til internetværktøjer og -applikationer, der blev valgt på baggrund af Blooms digitale taksonomi om læringsdomæner (Churches, 2007, 2008). Aktionsforskningsworkshopperne gav de studerende mulighed for at dele og reflektere over deres læringsoplevelser omkring internettet. Designet muliggjorde større deltagelse og involvering af forskningsdeltagerne end den traditionelle mere teknisk orienterede undervisning, der ofte ses i udviklingsprojekter omkring informations- og kommunikationsteknologi indenfor ICT4D) – traditionen.

Forskningsresultaterne viser, at de barrierer som kvinderne mødte vedrørende internetadgang, både skyldtes den første og anden digitale kløft. Selvom læse- og skrivekompetencer og uddannelsesniveau er

væsentlige faktorer i anvendelsen af IKT, så kan det ikke konkluderes i en indisk sammenhæng, at fordi en kvinde er uddannet, så bruger hun internettet. Resultaterne afslører også nogle uudforskede områder af den anden digitale kløft inden for ICT4D-litteraturen i en indisk kontekst såsom mangel på viden og kompetencer til at bruge de tilgængelige internetressourcer, teknofobi, tiltro til egne internetevner (self-efficacy) og manglende motivation. Forskningen viser også, at sociokulturelle faktorer, fx kønsbestemte roller, begrænsede deres mobilitet og mulighed for at bruge offentlige internetcaféer. Forskningsresultaterne vedrørende barrierer for internetbrug viser, at det blot at tilslutte en computer til internettet ikke naturligt medfører udvikling. Baseret på mine forskningsresultater anbefaler jeg, at udover at sørge for at alle har internetadgang, så bør regeringerne også overveje hvilke strategier der kan anvendes for at tilskynde brugen af de tilgængelige internetfaciliteter. Forskningsprojektet viser også, at kvinder fra udviklingslande kan opnå empowerment gennem at lære at bruge internettet, hvis der bliver skabt et befordrende og støttende læringsmiljø. Forskningsresultaterne viser, at empowerment er en proces, der kan opleves, men også et resultat, der kan måles.

Wengers sociale læringsteori blev anvendt for at forstå processen omkring empowerment. Teorien var behjælpelig i forståelsen af, hvordan de kvindelige studerende begyndte at identificere sig med internetverdenen og blev internetbrugere, særligt i sammenhæng med læringsprocessen. Det grundlæggende princip i praksisfællesskaber (CoP), der fokuserer på "at høre til" og "at kunne" er en god teoriramme for forskningsprojektet, da fokus var på de studerendes læring i at bruge internettet, og ikke på at de skulle blive eksperter i dets anvendelse. De refleksive kompetencer, som de studerende har opnået ved at lære at bruge internettet, er livslange kompetencer.

Resultaterne viser også, at de studerendes empowerment ligeledes kan måles på mikroniveau. Empowerment indikatorer, der tager hensyn til, hvad empowerment betyder for projektdeltagerne, kan anvendes til at måle empowerment. Den analytiske ramme, som jeg anvendte i forskningsprojektet til at måle empowerment (Measuring Empowerment Framework), faciliterede ikke kun målingen af de indikatorer for empowerment, der blev udviklet i forskningssammenhængen, men også påvisningen af, hvorvidt deltagerne vil have mulighed for til at anvende deres erhvervede kompetencer og færdigheder til at bruge internettet i fremtiden.

Baseret på de empiriske resultater og teoretiske diskussioner af projektet fremsætter jeg et forslag til, hvordan et læringsforløb om internetbrug til kvindelige brugere i udviklingslande kan designes.

Forskningstilgangen til dette design er baseret på menneske-computer interaktion til udvikling (HCI4D), og en sådan læringsmodel er nyskabende på området for HCI4D. Der lægges vægt på en forståelse af forskningsdeltagernes baggrund, deres værdier og overbevisninger om internettet, og hvorfor internettet er vigtigt for deltagerne. Forskningen indtager den holdning, at Nardi og O'Days (1999) arbejde omkring teknologibrug på lokalt plan kan bruges til at understøtte læringsdesignet af internetbrug i en ICT4D sammenhæng.

Designet erogså baseretpå den opfattelse, at det at lære at bruge internettet i etICT4Dscenarie kangive de kvindeligedeltageremulighed forat konstruere enidentitetsom internetbruger. På baggrund af deempiriske forskningsresultater anbefaler jeg, at Wengers(1998) læringsmodel anvendes som etteoretisk grundlagfor atfacilitere identitetsdannelsesprocessen. Når læring ses som det "at blive en internetbruger," så erlæringspotentialetstørrefor deltagerne, fordi de opdager, hvad de er gået glip afved ikke at være en del af internetverdenen,og de lærer athåndtereflere forskellige identiteter, hvilket er essentielt iforhold til atkunne fungere som kvindei specifikkekulturelle kontekster.Igennem denne identitetsdannelsesproces udviklede deltagerneen følelseaf at tilhøre internetverdenen, og det motiverede dem til at brugeinternettet efterudviklingsinterventionen.På baggrund af forskningsresultaterne foreslår jeg også, at et læringsdesign bør indeholde kønssensitive elementer i undervisningen.Forskningenafdækkerårsagerne tilbehovet forkønssensitiv undervisning ogbelyser vigtighedenaf kvindeligeunderviseretil at undervise kvinderi at lære at brugeinternettet eller et andet IKT-værktøj ien udviklingsmæssigsammenhængfor at skabeeffektive resultater.

Afhandlingen skaber nye visioner omkring, hvordan interventionsorienteret forskning med henblik på at bygge bro over den digitale kløft for kvinder kan udføres til gavn for politiske beslutningstagere samt andre forskere og designere inden for ICT4D. Afhandlingen afhjælper en mangel i litteraturen ved at introducere nye elementer fra den anden digitale kløft og bidrager også med en ny teoretisk og metodisk indsigt på området. Denne afhandling belyser også, hvorledes begreber fra teorien om praksisfællesskaber (CoP) kan anvendes til at adressere den uformelle læring, der sker i ICT4D-projekter, og hvorledes dette kan åbne op for nye måder at gøre undervisningen mere effektiv på ud fra designernes synspunkt, og hvorledes læring i at bruge internettet eller andre IKT-baserede værktøjer i en udviklingsmæssig sammenhæng kan gøres mere effektiv ud fra deltagerenes synspunkt. Praksisfællesskaber er ikke tidligere blevet udforsket i litteraturen omkring empowerment i

en udviklingskontekst. Ved at kombinere det teoretiske fundament for læringsteorien omkring praksisfælleskaber med empowerment-begrebet giver afhandlingen andre forskere nye perspektiver på anvendelsen af teorier i forskningsundersøgelser med empowerment som udviklingsmål.

Et andet vigtigt område, som forskningen bidrager til, er anvendelsen af aktionsforskningsmetode i sammenhæng med udviklingslande. Facilitering af forandring ved hjælp af en aktionsforskningsintervention er sjældent brugt inden for området for ICT4D. Afhandlingen viser yderligere, at der er et behov for et større fokus på den anden digitale kløft inden for ICT4D. Medmindre problemstillingerne vedrørende den anden digitale kløft bliver adresseret, vil særligt kvinder fortsat være dårligt stillet og vil ikke være i stand til at udnytte informationsalderens fordele på trods af, at de får tilstrækkelig adgang til internettet.

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CHAPTER 1

Introduction to Research

Chapter 1 aims at giving an overview of the research. Because of the complexity of this research, and the many fields and topics that converge in it, the research topic is introduced in a deductive way in order to present a clear understanding of the research theme. Firstly, a concise outline of the background of the research will be presented in the introductory chapter. Then the chapter describes the developmental potential of Information and Communication Technologies (ICTs) focusing on the Internet as the specific tool. Furthermore, the unequal distribution of ICT and the Internet that characterizes digital divide is discussed, and the differences in ICT and Internet usage among women users are examined with specific focus on a developing country context. Then the problem formulation, aim of the research and research questions and significance of the research are presented. The chapter also provides insights on the research context from a country, state and institutional level perspective. The chapter concludes by describing the structure of the thesis.

1.1 Research Background

ICT plays a crucial role in the social, economic, cultural and political development of a country. This development contribution of ICT has been dramatic over the years (Heeks, 2010). ICTs have the power to improve the lives of people by enabling access to knowledge, participation in civic life and achievement of individual freedoms and moreover facilitate economic growth and social development, improve healthcare, education and government functioning (Qureshi, 2012a). "In this new era of hyper-connectivity, ICT will begin a bold new chapter and will be closely linked to continued economic growth worldwide" (GITR, 2012, p. ix). The ITU (2012) report claims that globally there has been an increase in the uptake and usage of ICTs because of this economic contribution.

As regards the educational sector, ICT is considered to have the potential to revolutionize the educational system and to equip students for the new information age with improved learning attitudes and improved learning outcomes (Albirini, 2006; Kozma, 2005; Twidle, Sorensen, Childs, Godwin, & Dussart, 2006; UNESCO, 2011). It is impossible to imagine future learning environments that are not supported, in one way or another, by ICT (Assar, Amrani, & Watson, 2010). The Internet is an ICT tool which has dramatically influenced the educational sector. The Internet helps students to access information sources from various parts of the world and gives them the opportunity to choose from an updated repository of materials within a short span of time (Kabilan & Rajab, 2010; Nwagwu, Adekannbi,

& Bello, 2009; Yumuk, 2002). The rapid expansion of free electronic educational material on the Internet has given those fortunate enough to have access to it a new way of acquiring information (Hatakka & Lagsten, 2012). However, Internet usage is distributed unequally, especially between developed versus developing countries (Walton, Yaaqoubi, & Kolko, 2012).

The purpose of this study is to find out what prevents women, specifically in the context of a developing country such as India, from using the most powerful ICT tool, the Internet, even when access is easily available, thus addressing the issue of second order divide. The research will bring insights on a) the barriers which prevents women from using the Internet in a developing country context; b) how learning to use the Internet can empower women student users at the micro level; c) understanding the impact of an ICT project in a local context while considering the participants' perspective at the micro level; and d) factors to be considered when designing for learning to use the Internet in a developing country context.

Figure 1.1 shows the order in which the themes that the research deals with are discussed in this chapter.

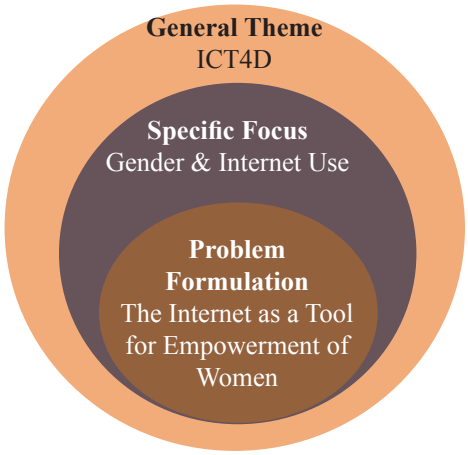

Figure 1.1. *Overview of the topics discussed in chapter 1*

1.2 ICT as a Developmental Tool

There are many takes on how ICT can contribute to development in the literature of the field. Firstly, I will define ICT in order to make clarify its significance and potential as a developmental tool.

Dennis Stevenson first coined the term ICT in his 1997 report to the UK government about the usage of ICT in UK schools, where he suggested future initiatives based on the analysis of the current situation. The "C" was added to "IT" to reflect on the increasing role of both information and communication technologies in all aspects of society (Stevenson, 1997). ICT comprises many innovative tools and ways of gathering and sharing information that would have been impossible a few years back. ICT encompasses an array of technologies such as microelectronics, computer hardware and software, telecommunications, semi-conductors, fiber optics, satellites, mobile telephones, touch screens, wireless local loops, sensor based networks, geographic information systems, and also, a range of applications such as the Internet, email, distance or open learning, teleworking, digital radio and video. (Bhatnagar, 2000; Hamelink, 1997; Marcelle, 2000; Odame, 2005; Tongia, Subrahmanian, & Arunachalam, 2005; Wangmo, Violina, & Haque, 2004). Thus it includes all technologies that enable producing and handling information, that facilitate processing, and enable the transfer and exchange of information and communication (Hamelink, 1997; Marcelle, 2000; Tongia et al., 2005; UN, 2005a; Wangmo et al., 2004). The combined processing and networking power of current ICT has led to a global socio-economic paradigm shift which other earlier technologies like radio and television could not bring (UNESCO, 2011).

Knowledge is very important for the development of a society and its people, and how a society succeeds in today's knowledge economy depends on how it embraces the information and communication technologies. "The intrinsic value of ICT lies not in easier exchange of information and aid in communication but rather in enabling growth and development" (Singh, 2005, p. 7). Access to information and communication technologies is a key factor which contributes to the socio-economic development of a society (Armenta, Serrano, Cabrera, & Conte, 2012).

In the end of 1990s and beginning of twenty-first century, the issue was debated at international, national and regional levels, and scholars came to the conclusion that access to information through ICT would assist in poverty alleviation and development and thus making developing countries on a par with developed countries (Singh, 2005).

These discussions paved the way for ICT investments and initiatives as well as the development of technological infrastructure and diffusion and usage of ICT enabled services aimed at developing countries (Baliamoune-Lutz, 2003; Hafkin, 2002; Heeks, 2010). Realizing the potential of ICT in the social, economic and cultural development of society, many developing countries are rushing to implement various ICT4D projects to bring local and national development (Ashraf, Swatman, & Hanisch, 2008; Bajwa, 2003; infoDev, 2010).

From a social perspective, development is about achieving universal primary education, promoting gender equality, improving health, especially maternal health, reducing infant mortality, and combating dangerous diseases (Morales Gómez &Melesse, 1998). ICT has been widely recognized as a potential tool for development (Avgerou & Walsham, 2000; Heeks, 2008; Tongia et al., 2005; UNDP, 2001a; World Bank, 2012). ICT can play an imperative role by making citizens more knowledgeable and skilled, which will help them solve the complex problems of life which they face in society as well as aid in development (UNESCO, 2011; World Bank, 2012). ICT has the potential to create jobs, improve access to basic services, increase the effectiveness of governments and facilitate the sharing of information with people, especially the poor and women, living in even remote parts of developing countries (Bajwa, 2003; UNDP, 2001a; Walsham, 2010, p. 1; World Bank, 2012).

International organizations such as the United Nations and the World Bank have realized the potential of ICT to bring development to third world countries in the form of reducing poverty, increasing productivity, boosting economic growth and improving accountability and governance (UN, 2005a; World Bank, 2012).

Many debate over the use of ICT for development in terms of whether importance should be given to providing the basic amenities to the needy and poor rather than ICT resources. Scholars who defend role of ICT for the development of a nation argue that "[t]he issue is whether we accept that the poor should, in addition to the existing deprivation of income, food and health service, etc., also be further deprived of new opportunities to improve their livelihood" (Weigel & Waldburger, 2004, p. 18). Instead of denying the benefits of new opportunities through ICT, it is better to reduce the gap by providing the underprivileged ICT services that can have a greater impact on their livelihood (Singh, 2005). Moreover, it has been observed that the poor are willing to spend a portion of their income on ICTs if they can obtain real economic benefits by using them (Huyer & Carr, 2002).

Singh (2005) argues that although information is not a magic cure for hunger or poverty, the right information at the right time can help in finding a solution to improve the livelihoods of people. On a similar note, Walsham (2010) is of the opinion that although ICTs are essential and relevant for development, they should not be seen as 'silver bullets' of technology as this is not the answer to the social problems in society; however, the availability and use of technology can bring tremendous improvement in the functioning and overall development of a society. The aim of development should be to use technology to offer the poor new choices to build better lives (UNDP, 2001a). For example, ICT can help to reduce poverty directly by providing access to information, equalizing opportunities in rural areas, and contributing to pro-poor market developments such as microfinance and mobile money. ICT also indirectly reduces poverty by contributing to the growth of the ICT sector such as infrastructure, networks, ICT service industries, and media (World Bank, 2012).

Avgerou (2010) states that any ICT project that is aimed at development requirements needs to consider assumptions concerning the nature of ICT innovation and the way the innovation brings development. To address this, the author accentuates two perspectives concerning the nature of the innovation process: firstly, transfer and diffusion, where the process of diffusion of knowledge is transferred from advanced economies and adapted to the conditions of the respective developing country; and secondly, the social embeddedness perspective, where significance is placed on the social dynamics in the context of the respective country. The cognitive, emotional and political capacities of the individuals in the local context are considered in the social embeddedness approach, and it throws light on what is meaningful and acceptable locally.

According to Avgerou (2010), the developmental aims through ICT can be classified as a progressive transformation perspective, where ICT is viewed as an instrument which brings economic and social gains. Another perspective is the disruptive transformation perspective, which questions the developmental outcomes or unequal effects on different categories of a population. This perspective places emphasis on the weak and vulnerable in the socio-economic settings of society and those who are at risk or might loose out from ICT development initiatives (Avgerou, 2010).

1.3 Impact of ICT on Education & Learning

The opportunities offered by technology in education can facilitate improved and engaging learning experiences (UNESCO, 2011). ICT has the potential to support a wide range of learning activities (Tella, 2011). ICT also plays a significant role in helping educational institutions to become more competitive in international markets through the Internet and technology mediated learning environments (Mazzarol, Hosie, & Jacobs, 1998). Sam, Othman and Nordin (2005) state that "technology is challenging the boundaries of the educational structures that have traditionally facilitated learning"(p. 205).

At the present time, understanding and mastering the basic concepts and skills of ICT is considered to be part of basic education alongside reading, writing and numeracy (UNESCO, 2002). Digital literacy has become a prerequisite for students of this generation. To use technology and to produce new knowledge digital capabilities have become fundamental twenty-first century skills.

Countries need to prepare the students of this generation to cope with the demands of the new digital age, where there is a growing dependency on digital content instead of paper-based content, by providing infrastructure and opportunities to learn through ICT. The demands of the labor market are changing across the world. ICT can play a crucial role in preparing students for a globally competitive workforce through improving student achievement by easing access to schooling, enhancing students ability to learn and promoting lifelong learning(UNESCO, 2011).

The educational sector has been strongly influenced by the emergence of Internet Technologies since the growth of the Internet has changed how knowledge is developed, acquired and delivered (Sookram, 2008). Through the Internet a wide range of information is available, free of cost, which was unthinkable 20 years ago, and this facilitates large scale sharing of information through websites, virtual classrooms, virtual libraries and emails (GITR, 2010).

1.4 The Internet - The Inevitable ICT Tool of the New Digital Age.

Throughout the 1980s and 1990s, a technological revolution has occurred; firstly through the large scale adoption of computers and then in the form of the ongoing Internet revolution, which had an exponential growth rate, making it a prerequisite for the information

age (Schumacher & Morahan-Martin, 2001). While computers were the cutting edge technology in 1980s, where personal computers and computer networks began to take over offices and became widely popular (Barak & Suler, 2008; Durndell & Haag, 2002), the Internet represents the cutting edge technology of the 1990s with the introduction of the first browsers and the emergence and widespread acceptance of Microsoft Windows and Apple systems with advanced graphic solutions (Barak & Suler, 2008; Durndell & Haag, 2002).

The Internet is an "unsurpassed repository of information of all kinds – from specific to general, from minutiae to trivia to depth of detail, to historic and up-to-the minute" (Nwagwu et al., 2009, p. 718). The Internet is a way to complete daily tasks, to gather information, a source of entertainment and it touches upon every aspect of our life (Amichai-Hamburger, 2002). Few technologies have had such a global impact cutting across a wide range of sectors and within diverse socio-economic groups like the Internet based technologies and World Wide Web, (Hill, Wiley, Nelson, & Han, 2004). In today's time, the Internet has become a platform for engagement in a variety of activities which substitutes parallel activities in the physical, face-to-face world (Barak & Sadovsky, 2008). The global economy is transforming into an Internet economy (Ramayah, Jantan, & Ismail, 2003). In the twenty-first century, the educational and economic development of a society will depend on citizens' attitudes towards using and learning to use the Internet (Tsai, Lin, & Tsai, 2001).

As Owston (1997) has stated "nothing before has captured the imagination and interest of educators simultaneously around the globe more than the World Wide Web" (p. 27). The ease and speed with which knowledge is accessed and disseminated through the Internet from information sources around the world encourage the educational institutions to invest in Internet infrastructure and technologies for the benefit of staff and students (Nwagwu et al., 2009). Internet technologies are considered promising tools for learning (Hill et al., 2004). The Internet can exponentially increase the knowledge base of teachers and students by connecting them to information resources which are far beyond the physical confines of the classroom (Kumari, 1998). Internet literacy is a must to become information literate and for lifelong learning, claim Tsai et al. (2001). If students are not able to analyze, interpret and create materials on the Web and in other digital environments, they may be incapable of functioning effectively in different social spheres as literate citizens (Hawisher, Selfe, Moraski, & Pearson, 2004).

The Internet has transformative powers in the development of educational organizations and for students in developing regions (Hatakka & Lagsten, 2012). For example, people from rural areas have the opportunity of applying online to universities and colleges, which ensures that the physical distance is not a hindrance to the admission process; and they also have the opportunity of enrolling in a formal degree program offered by educational institutions online. Moreover, people can also make use of acquiring skills through the informal courses which are also available through the Internet (Perez & Ben-David, 2012). However, the Internet is not distributed equally and there is an inequality in the usage of Internet.

The lack of access to ICT and the Internet for citizens in the developing countries reduces their chance of effectively participating in the new information age and reaping the benefits of that technology which may improve their overall life conditions.

1.5 Digital Divide – The Real Hitch for ICT4D

Even though the growth of ICT has been exponential, it has not been evenly distributed within societies or around the world, which means that in some countries, people are unable to take advantage of the opportunities provided by ICT, as they do not have access to it (UNESCO, 2011). This difference or inequality in access of ICT between people is referred to as the digital divide. Digital divide is thus the separation between those who have access to digital information and communications technology and those who do not and therefore are unable to participate in the information economy and reap the benefits of the opportunities provided by ICT (Dewan & Riggins, 2005; Qureshi, 2012b). In other words, the expression is mainly used to signify the gap between the "haves", who have access to and use digital technologies, also called the "information rich", and the "have nots", who do not have access to technologies, who are also defined as the "information poor" (Hargittai, 2004; Umrani & Ghadially, 2003).

The digital divide is also reflected in the usage of the ICT tool the Internet. Some scholars use the term "digital divide" mainly to address the gap or difference in people's usage of the Internet (Dimaggio, Hargittai, Celeste, & Shafer, 2004; DiMaggio & Hargittai, 2001; Hargittai, 2002; James, 2004). Even though the Internet has the potential to achieve greater social equality and empower and improve the everyday lives of marginalized people by providing uninterrupted information and enhancing their opportunities to add value to their life, the inequality in terms of access will deny opportunities for the already

underprivileged while bringing more opportunities for the already privileged (Hargittai, 2003; Mehra, Merkel, & Bishop, 2004). As any other new technology, the Internet has been unequally distributed across societies and therefore does not offer the same opportunities to everyone or every social group to the same extent (Pan, Yan, Jing, & Zheng, 2011; Walton et al., 2012)

According to ITU (2012), 70.2% of individuals in developed countries use the Internet, while the percentage of individuals who use the Internet in a developing country context is only 24.4 % . The ITU report (2012) states that "while in most developed countries it is difficult to imagine day-to-day life without Internet, two-thirds of the world's population, and more than three quarters of the population in developing countries, are not yet online, and of those that are, many do not have access to high-speed, high-quality Internet services" (p. 8). According to the Global Information and Technology Report (GITR, 2012), only 7.5% of the Indian population uses the Internet.

The literature on the digital divide indicates that there are two types of digital divides. In the first order divide, emphasis is on physical access statistics that bring disparities in usage (DiMaggio & Hargittai, 2001; Hargittai, 2002; Hargittai & Hinnant, 2008; Warschauer, 2002). The underlying factor of first order divide was mainly access and connectivity measured as figures on connectivity. This limited the scope to binary classification of technology use by only taking into consideration whether people use ICT and the Internet or not (Hargittai, 2002; van Deursen & van Dijk, 2010a; Warschauer, 2002). The emphasis on technical parameters related to computer access and connectivity gave a picture of the magnitude of the divide but did not provide a complete picture of the dimension and its context (Armenta et al., 2012).

1.6 Second Order Divide

Second order divide is characterized by "inequality in the ability to use ICT among those who already have access" (Dewan & Riggins, 2005, p. 300). Thus, scholars realized another dimension where they explained that the problem of digital divide not only concerns physical access and connectivity, but also includes a complex array of factors. The present research focuses on the second order divide in Internet usage.

For some scholars, the digital divide is characterized by people's varying levels of online skills (Hargittai & Shafer, 2006; Hargittai,

2002, 2006; van Deursen & van Dijk, 2009, 2010a). They argue that because of the growing amount of information on the Internet and people's increasing dependence on information, it is vital how people succeed in obtaining relevant information, and those who do not have the necessary skills are at a disadvantage. Internet self-efficacy, or the belief in one's capabilities to organize and execute Internet actions required to produce given attainments, has been identified as an important factor which causes the digital divide separating experienced Internet users from novices (Eastin & LaRose, 2000).

Factors such as inequality in equipment, autonomy, skill, support, and scope of use among people who are already online are emphasized to address the second order divide by Dimaggio et al. (2004) and DiMaggio & Hargittai (2001). Utility expectancy and utilization capacity of Internet users are factors which contribute to difference in Internet usage as stated by Pan et al. (2011) and Walton et al. (2012). Some scholars argue that internal and psychological forces and attitudes are also significant factors which contribute to second order divide in people's Internet usage (Donat, Brandtweiner, & Kerschbaum, 2009; Partridge, 2007).

In short, there is not a single measure which defines the divide, because the factors which cause the divide is woven in a complex manner in social systems and processes (Warschauer, 2002). The divide arising because of physical access has been addressed, while the divide arising because of social, cultural, psychological and other factors which bring disparity in Internet usage is currently widening (van Deursen & van Dijk, 2010a).

A significant factor, which is the core of this research, is that a majority of the population who does not obtain advantages of the new technologies are women. Women often face the challenge of getting adequate information that can improve their livelihoods and help them achieve human rights, mainly because of gender biases in ICTs and their applications. The next section will provide background information on issues of gender in ICT usage.

1.7 Gender & ICT

Gender and development hold a key prominence in the field of ICT4D (Bidwell et al., 2010). "The empowering use of ICTs is closely connected to socio-economic development, and this potential towards social transformation demands that everyone should have access, however there is inequality in access especially in relation to women"

(Wamala, 2012, p. 3). Promoting gender equality and empowering women is one of the important Millennium Development Goals of the United Nations (UN, 2001). ICT is considered a useful tool, which will aid in achieving Millennium Development Goals through gathering, storing and analyzing information with greater accuracy (Tongia et al., 2005). Gender issues in ICT gained global attention with the fourth World Conference on Women in Beijing in 1995 (Hafkin, 2002), in realization of the fact that the majority of women in developing countries are not getting advantage of the information economy. While there are women who are highly skilled and whose income and work experience have improved because of the knowledge based economy, at the same time there is a larger group of women who face barriers in order to fully participate in the knowledge economy (Marcelle, 2000).

It has been observed that accessing and using ICT is more challenging for women in the global South (Wamala, 2012). Women, especially those living in rural areas, are still excluded from accessing the Internet or do not have the skills to use it in a profitable way (Huyer & Sikosa, 2003; UN, 2005b). Hafkin (2002) argues that unless gender issues are not addressed in ICT policies, women will not gain the benefits of the information age, and therefore engendering the ICT policies should be given great importance. In order to ensure that women in global South are not left behind in ICT usage, awareness of the gender dimension of access, need and use of information technologies is crucial (Best & Maier, 2007), because ICT can play a big role in addressing the gender gap in endowments, including health, education and material assets (World Bank, 2012).

1.7.1 Challenges for Successful Usage of Computers/ ICT by Women Users

The literature on women's technological use concerns the usage of ICT and computers by women users. The gender divide that has been identified means that women and girls have less access to information technology compared to men, especially in developing countries (Hafkin, 2002; Huyer & Carr, 2002; UN, 2005a). This gender divide has its roots in social and cultural factors, which influence the use of technology by both men and women (Cooper, 2006). The ways in which women can make use of ICT and other technologies are influenced by factors such as nationality, class, ethnicity, age and position in society (Marcelle, 2000).

Some of the major barriers that have been identified in the literature which restrict the use of ICT and computers for women are the

infrastructural problems and literacy problems (Hafkin, 2002; Huyer & Carr, 2002; Huyer & Sikosa, 2003; Melhem, Tandon, & Morrell, 2009; UN, 2005a; Wangmo et al., 2004); these barriers are classified as follows:

- Access and connectivity
- Pre-knowledge of using and operating ICT and computer devices
- Illiteracy
- English language skills (as most of the content available is in English)
- Low priority given to women's education

Apart from these barriers, there are some socio-cultural factors which constrain women's access to and use of ICT that go beyond issues of infrastructural and literacy problems; they have been identified in the literature of the field (Broos, 2005; Hafkin, 2002; Huyer & Sikosa, 2003; Jackson, Ervin, Gardner, & Schmitt, 2001; Melhem et al., 2009; Sherman et al., 2000; UN, 2005a; Wangmo et al., 2004), and are:

- Restriction of mobility, both in the sense of access to transport and possibility to leave the home
- Time constraints imposed by role responsibilities
- Perception of technology being masculine
- Technophobia
- Public access points which are not comfortable for women
- Lack of control over family income

Women tend to lag behind men in knowledge of and competence to use computers (Broos, 2005; Durndell & Haag, 2002; Volman & van Eck, 2001). Studies also indicate that women show more computer anxiety than men (Bradley & Russell, 1997; Broos, 2005; Busch, 1995; Coffin & MacIntyre, 1999; Durndell & Haag, 2002; Farina, Arce, Sobral, & Carames, 1991; Jackson et al., 2001; Rosen & Weil, 1995). When it comes to self-efficacy beliefs in using computers, women have been observed to show lower perceptions of self-efficacy compared to men (Busch, 1995; Coffin & MacIntyre, 1999; Jackson et al., 2001; Miura, 1987; Torkzadeh & Koufteros, 1994), and they are less motivated to use computers and show a lower perception of task value with computer use (Coffin & MacIntyre, 1999).

1.7.2 Gender & the Internet

The Internet is one of the Information and Communication Technologies that has brought substantial changes to the ways people communicate, and how information is exchanged across the globe. With the growth of the Internet, it is significant to take into account the gender difference which affects Internet use (Durndell, Haag, Asenova, & Laithwaite, 2000). Kennedy, Wellman, Klement & Klement (2003) argue that "gender, as a structuring category of social life affects almost everything that people do, including access to the Internet and as long as gender has any social meaning, the Internet will be gendered" (p. 165). Men have been seem to dominate the Internet since its inception (Durndell & Haag, 2002). While there is no denying the fact that the number of women using the Internet has increased, which makes it easier to conclude that concerns on gender equity have no relevance (Jackson et al., 2001), an optimistic conclusion on gender equity on Internet use is premature considering the long history of gender differences in computer use, argues Joiner et al (2005). Contrary to the expectations that gender differences in Internet usage would disappear, gender differences continue to be reported in research studies (Broos, 2005).

Digital divide as regards the Internet is fundamentally gender related (Bimber, 2000; Kennedy et al., 2003; Ono & Zavodny, 2003; Vijayalakshmi & Bhavani, 2006). Even though women's Internet usage has increased dramatically over the past years, a gender gap still persists in Internet usage (Bimber, 2000; Durndell & Haag, 2002; Johnson, 2010; Kennedy et al., 2003; Pan et al., 2011).

The factors that cause gender differences in usage of computers and ICT can be generalized and these factors are also identical to the gender differences in using the Internet. Internet access could be argued to be a natural extension of computer use since access and use certainly involves using a machine or technology (Durndell & Haag, 2002). Schumacher & Morahan-Martin (2001) also argue that since the Internet is primarily computer-based, experience, skills and attitudes towards computers should logically affect experience, skills and attitudes towards the Internet. Thus it can be assumed that the Internet use and attitudes follow the existing equivalent literature on computing, in particular in tending to produce evidence of a gender effect (Durndell & Haag, 2002). These gender differences can be explained through cognitive, motivational, and affective factors in understanding what causes women to use the Internet and also why they stay away from the Internet (Jackson et al., 2001).

The Internet is not viewed as an enabling environment for women as many women do not feel comfortable with some of the content (Gajjala, 2002). As regards Internet usage, some scholars have observed that women tend to show higher levels of discomfort with the Internet and they show more anxiety (Chou, 2003; Jackson et al., 2001; Schumacher & Morahan-Martin, 2001; Tsai et al., 2001). Men tend to show higher perceived Internet self-efficacy or confidence in their ability to use the Internet (Cheong, 2007).

Studies on gender differences have observed how men and women differ in their Internet use: Women use the Internet less frequently compared to men (Bimber, 2000; Kennedy et al., 2003; Ono & Zavodny, 2003; Wasserman & Richmond-Abbott, 2005). Men have more skills than women in both using the Internet and obtaining information from the Internet (Schumacher & Morahan-Martin, 2001). Men use the Web with a stronger motive for information than women, and thus, while men and women use the Internet equally often, they use it differently (Jackson et al., 2001). Women use emails more, which reflects the motive for strong interpersonal communication (Jackson et al., 2001; Wasserman & Richmond-Abbott, 2005). Through their studies, Joiner et al. (2005) found a number of gender differences in participants' use of the Internet, such as men being more likely to have their own web page than women, men using the Internet more than women, in particular game websites, other specialist websites and to download material from the Internet. Similar results were found by Sam et al. (2005) who report greater gender equivalence in interest, opportunity, use, and skills level concerning Internet use. Hargittai & Shafer (2006) found that women tend to rate their online skills lower than men; and this lower self-assessment vis-à-vis web-use ability significantly affected their online behaviors and types of uses of the Internet.

From a developing countries perspective, women, especially those living in rural areas, are still excluded from accessing the Internet or do not have the skills to use it in a profitable way (UN, 2005b). Taking the case of India, where the present research was done, studies show that women's Internet usage is not commendable. Vijayalakshmi's & Bhavani's (2006) study on the Internet usage among men and women in the South Indian state of Andhra Pradesh showed gender differences in use due to age, language abilities, parental support, status and social constraints. In a study done by Best & Maier (2007) in Tamil Nadu in South India, factors such as time, illiteracy and location of an Internet kiosk prevented women from accessing the Internet. In her study of Internet usage among women in a southern city in Chennai, Johnson (2010)found that women's Internet usage was negligible. Moreover, she found that this was in spite of the fact that there was easy access to

Internet, either at home or through neighborhood cyber cafés, and the degree of the participants' computer literacy. In their study about the gender difference in usage of cyber cafés and Internet cafés in India, Krishnatray, Singh, Raghavan, & Varma (2010) found that women do not use cyber café as much as men do and the number of women visiting these cafés decreases further during the evening.

There is no dearth of Internet cafés in India which provide easy access for women coming from weaker financial backgrounds. However, Internet centers are not considered appropriate places to be for girls, and even if they do go, they prefer to be accompanied by someone, in particular in small towns and villages (Johnson, 2010). This is because Internet cafés offer a certain amount of secrecy around virtual dating, flirting, expressing sexuality and coded flirting behavior (Rangaswamy, 2009).

As regards Internet usage in India, there are 65 million active Internet users (who use the Internet at least once a month) according to the report published by the Internet & Mobile Association of India (I-cube, 2011). The gender-segregated data is available only for active Internet users in urban areas. Out of the 28 million active Internet users in urban areas, working women (between 21 and 58 years) constituted only 2 million users and non-working women (between 25 and 58 years) constituted only 2.2 million active Internet users.

1.8 Problem Formulation - Empowerment of Women through the Internet

The potential of ICT as a developmental tool and a transformative tool in education and learning, especially with Internet technologies currently being considered indispensable in a learning scenario, calls for an investigation on how women students from a developing country such as India take advantage of this vital tool. Even though Internet usage has been reported to have great potential with its possibility for acquiring information quickly and easily and thereby enhancing social and political participation and economic wellbeing of women users, it has been observed in the literature of the field that barriers for women's successful Internet usage do exist especially in developing countries. There is a need for identifying how engendering effects on Internet usage can be promoted when access is easily available because this may bring empowering experiences for women users in developing countries.

The present research is based on an interest in how women can be empowered through learning to use the most powerful ICT tool, the Internet. Through the research, I was concerned with learning how women students make use of the available Internet facilities and the reasons for why they shy away from using the Internet. The adoption and use of any technology is influenced by the technological environment into which it is introduced, and these environments are place-based and their structuring is influenced by local histories, cultural practices and geographical conditions (Gajjala, 2002). Taking into consideration the intertwined social, cultural and economic factors which influence Internet usage, new insights on how to make women use the available Internet access facilities and how can they be empowered are uncovered through an intervention oriented research approach.

1.9 Aim of the Research

My motivation is derived from the literature on ICT4D, which calls for understanding the more complex issues that need to be addressed in order to use the Internet as a means to empower women users when access to the Internet is easily available, thus addressing the issue of second order divide. The research brings insights on the complex interplay of gender, Internet and culture from the developing country context of India. The aim of the research is to contribute to the field of ICT4D by researching how Internet can become a transformative tool in a development scenario through the following specific aims:

- To learn what keeps women from using the Internet in a developing country context.
- To provide an understanding how women can be empowered through learning to use the Internet in a developing country context at the micro level.
- To give insights on how the concept of constructing identity through informal learning can contribute to the field of ICT4D with developmental efforts at the micro level.
- To provide insights on how empowered outcomes through ICT intervention in developing countries can be measured at micro level projects.
- To contribute a design for learning to use the Internet for women users in a developing country context.

The research is intended to provide answers to the following questions:

- What are the barriers which constrain women to access Internet in a developing country context?
- How can women be empowered through learning to use the Internet?
- What are the issues that need to be considered when designing learning to use the Internet by women users intended for their empowerment in a developing country context?

1.10 Significance of the Research

The literature on information and communication technologies is positive about its potential to transform developing countries into knowledge-based societies. Although the advantages and disadvantages of ICT interventions in developing countries have been discussed in the literature, the impact of these ICT interventions and how they more precisely contribute to development at the micro level have been less focused upon on. ICT enabled development needs to be explored in order to understand the participants' perspective better, providing another dimension to the field and more attention to ICT impact research (Ashraf, et al. 2008). A knowledge gap has also been observed with respect to the impact of ICT initiatives aimed at women (Ashraf, Hanisch, & Swatman, 2008). There is an immense need for research to fully understand the broad and complex issues of women and ICTs and the research is thin (Melhem et al., 2009).

The present research focuses mainly on the second order divide and how an intervention based research approach can address this issue by taking into account the socio-cultural factors and attitudes towards the Internet of the intended users. This research can contribute immensely to the ICT4D field by providing an understanding of how projects aimed at empowering women users through the Internet or any other ICT can be conducted and how empowerment can be measured from a participants' perspective while taking into account what their experience and attitudes before the intervention were and which changes the intervention have brought.

Another significant aspect which the present research contributes to is informal learning in ICT4D projects. Even though informal learning is a crucial component for the success of ICT4D based projects, it is rarely acknowledged in literature (Foster, 2011). Foster (2011) argues that most of the researchers in ICT4D focus on analysis of

products, and the process and informal learning concepts are only addressed peripherally and not emphasized sufficiently. This research will contribute in discussing how the theory of Communities of Practice (CoP) can offer developmental scholars and project managers a vocabulary to address the process and learning issues in informal learning environments and opening up new ways for understanding how learning to use ICT based tools in a developmental context can occur. The study hopes to bring new insights to policyholders, scholars and designers in the field of ICT4D aimed at gender development by filling the gap on some of the uncertainties and unidentified elements of second order divide. The study will also show that small-scale projects with limited funding can have a widespread international impact in addressing specific issues affecting particular groups of women (UN, 2002a).

In the following section, I will give an overview of the context of the research. This is significant because of the fact that people value and perceive ICT differently across cultures. This will also provide an overview of how far ICT has been implemented and used in these three different levels of research contexts which will be explained further.

1.11 Research Context

The research was carried out at the University of Calicut in the state of Kerala, India. In this section, I will explain the contextual factors of the research. An understanding of the social context is important because the socio-organizational settings of ICT development and use within sectors, countries, and regions may differ substantially (Avgerou, 2010). Moreover, conditions for the effective use of technology in education also varies from country to country (UNESCO, 2011).

Figure 1.2 shows how the research context will be discussed. Firstly, I will give a brief overview of country level demographic factors of India, usage of ICT in the informal and formal educational sector in India, and the potential barriers for usage of ICT in India. Then I will discuss the demographic factors of the state of Kerala and ICT usage, and lastly, the educational institutional context (university) and ICT usage.

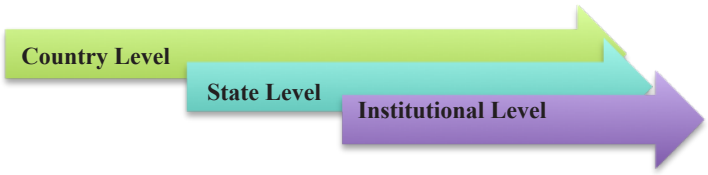

Figure 1.2. *Research context described in three levels*

1.11.1 India

India is the seventh largest and second most populous country in the world (infoDev, 2010) with a population of 1.21 billion (Census India, 2011). The gender composition is 624 million men and 586 million women. The country's literacy rate is 74 percent; the male literacy rate is 82 percent and the female literacy rate is 65 percent (Census India, 2011).

India has a large knowledge economy. The fact that knowledge plays a significant role in empowering people to achieve sustainable development has been long recognized in India (Singh, 2005). But India is also a country of striking contradictions; it is a global leader in the knowledge economy while at the same time the home of more than half the world's poor and illiterate people, most of them women (Reddi & Sinha, 2004). India's rapid economic growth rates over the past fifteen years coupled with the exponential growth of export-oriented software and ICT services have made India's position prominent in the world (Walsham, 2010).

1.11.1.1 ICT in the Indian Educational Context

In India, development and expansion in the area of higher education have been subject to the efforts of both the central and individual state governments, which function independently, and in addition, there are also private players in the educational sector (Reddi & Sinha, 2004). Through the Ministry of Human Resource Development (MHRD), the government provides policy framework, financial support and guidelines to ensure standardization of education, which are implemented at state levels through various departments run by the particular state (infoDev, 2010). Because of this decentralized system of education, national and state leaders face big challenges in building an educational system that can encompass all students (Cheney, Ruzzi, & Muralidharan, 2005).

For many years, India has actively used ICT in the development of its formal and informal educational sector. The first digital computer put to use in a developing country was installed in Kolkata in 1956 at the Indian Institute of Statistics (Heeks, 2009). Since the early 1950s, India have identified the need to use various media for promoting development and, implicitly, for education. India has experimented with different models of ICT enabled education in the form of radio-broadcasting technologies, satellite based learning, one-way and interactive televisions and mainly distance based learning (infoDev, 2010; Reddi & Sinha, 2004; Snehi, 2009).

The Government of India in its capacity building efforts of educational institutions in the country has recognized that emphasis should be given to the area of ICT. The Ministry of Communications and Information Technology was established to establish national policies relating to ICT usage and implementation (MCIT). The Department of Information Technology (DIT) within this ministry is responsible for formulating, implementing and reviewing national policies pertaining to information technology. To fully utilize the potentials of ICT as a tool in education and to bring down the digital divide, the Government of India made a budget allocation of 102 million US$ in 2008-09 for the National Mission on Education through ICT (NME-ICT, 2009). The mission aims at reaching an appropriate balance between content generation, research in critical areas relating to imparting of education and connectivity for integrating knowledge with the advancements in other countries. Since the educational institutions come under both the central and state government, the policy and decision makers at both levels have been promoting computer and Internet based learning along with broadcast ICT and promote both open and distance learning in formal and non-formal educational sectors (Reddi & Sinha, 2004).

Among the broadcasting technologies, the most popular and longest running is the countrywide classroom, which is a partnership between the University Grants Commission (UGC), the Consortium for Educational Communication (CEC) and 17 universities. Media centers are located at the universities and have produced programs that have been telecasted on National Television since 1984 (Reddi & Sinha, 2004; Snehi, 2009). University Grants Commission (UGC) included "Knowledge and the use of the new information and communication technologies" as one of its objectives in the Tenth Plan, and in the Eleventh Plan, the commission again specifies ICT integration in education as one of the thrust and priority areas. The Ministry of Human Resource Development along with the Ministry of Information & Broadcasting, the Prasar Bharti and the Indira Gandhi National Open University (IGNOU) have been running a project called Gyan Darshan

which broadcasts the programs of National Open School and Central Institute for Education Technology, National Council for Educational Research and Training (infoDev, 2010; Reddi & Sinha, 2004; Snehi, 2009).

There are initiatives from the private sector, too, which are aimed at ICT based services for formal and informal education; some of these initiatives are: a) Hole in the Wall project, which is a joint venture between NIIT Ltd and International Finance Corporation (HiWEL, 2011). The project was an effort to explore access to and use of Internet-based technologies in urban slums. The main aim of Hole in the Wall project (HiWEL) was to propagate and spread the idea of a learning methodology to contribute significantly in improving elementary education and life skills of children. The project, which started in Delhi, has been scaled up to cover several locations in the country. b) Tata Group in partnership with the State Government of Andhra Pradesh have developed a computer based functional literacy program with the aim of addressing the issue of adult literacy (Tata, 2005). c) Project Shiksha is another educational program which emerged as a collaboration between Microsoft and local governments to accelerate computer literacy for teachers and students across government schools (Project Shiksha, 2009). The goal of Project Shiksha is to deliver IT literacy and skills development to over 80,000 teachers and 3.5 million students.

In spite of these examples of how ICT is being used to enhance learning and how realizing the potentials of ICT to liberalize learning, planning and implementation of ICT are given priority, India still needs further steps to make ICT an essential component in teaching and learning initiatives. ICT based initiatives have resulted in positive effects, but "the beneficiaries are almost always not the poorest or most disadvantaged groups [and] it is hard to scale up initiatives to have effects throughout India" (Walsham, 2010, p. 1). Because of the vast geography with varying levels of development in different parts of the country, experiences of using ICTs for education across the country differ and ICT interventions which are immensely successful in one area may not be successful in another part of the country(infoDev, 2010).

There are some facts and numbers that clearly indicate that India needs further developmental initiatives to make ICT accessible for all. The Global Information Technology Report (2012), which claims to be the most comprehensive and authoritative international assessment of the impact of ICT on the development process and the competitiveness of nations, ranked India 69 out of 142 countries. India was ranked

number 48 out of 138 in 2011 and 43 out of 133 in 2010 (GITR, 2010, 2011). The report asserts that one of the most challenging factor for India is the country's low penetration of ICT. The country ranked 117th in terms of individual usage with 61 mobile subscriptions per 100 people and only 7.5 percent of the population uses Internet.

In India, only six percent of the households own a PC according to (GITR, 2012), and according to (UNESCO, 2011) the number of households using a PC is 3 out of 100, while only one per 100 of the population has an Internet subscription (GITR, 2012; UNESCO, 2011).

1.11.2 State Level Context

The state of Kerala is situated in South India and has a population of 33 million people (Census India, 2011) with Malayalam as the language spoken in the region. Kerala has occupied an eminent position in the development debate since the early 1970s due to its singular development strategy focusing on ''basic-needs-first'' that prioritized the improvement of socio-economic standards of its population, and which resulted in remarkable improvements in living standards and sharp decreases in poverty in Kerala (Justino, 2006). Kerala ranks first in the overall Human Development Index of all the states in India (0.625) (UNDP India, 2011) and ranks first in healthcare (0.854)(UNDP India, 2011).

Gender composition is a primary demographic characteristic of a human population which reflects the natality, mortality and migration character of the population, and Kerala ranks first with a ratio of 1084 females per 1000 males (Census India, 2011). Inequality in education is the lowest in Kerala (UNDP India, 2011), which is also reflected in the latest census report of India. Kerala ranks first in India with a total literacy rate of 93.91 percent (Census India, 2011) and it also ranks first when it comes to female literacy with a rate of 91.98 percent (Census India, 2011).

In India, as regards ICT adoption and usage states fall into two categories: the early starters, which now have a significant well established ICT industry, and the late starters, which do not have a proper ICT infrastructure in place and which lack in the areas of attracting investments and growth of the service sectors (Bajwa, 2003). Kerala falls into the category of late starters even though it has a strong record in higher education, literacy and health indicators (Bajwa, 2003). A large proportion of the people of Kerala are still excluded from the benefits of ICT (Kortemann, 2005).

1.11.3 Institutional Context

Empirical studies for this research were at the Department of Women's Studies, University of Calicut in Kerala. The University of Calicut, situated in the southern state of Kerala in India, was in established 1968 and was the second university in the state. The University of Calicut has now become the largest university in the state with 31 departments of postgraduate studies and research and 304 affiliated colleges serving 275,000 students every year.

The Department of Women's Studies, where the research was undertaken, was established in 2005 with a motto to act as a catalyst for the empowerment of women in the Malabar region. The group of student participants were twelve Master's students of the department born between 1988 and 1990 who were all women. The department followed a traditional classroom teaching methodology. The department had only two computers with Internet connection, but the curriculum did not have any learning activities that demanded students' engagement with ICT. Therefore, the students were not using the Internet for any of their academic endeavours.

The selection of the field was based on my familiarity with the university and the people, as this would give me an edge in obtaining data. Inspired by Bernard, I believe there is no reason to select a site that is difficult to enter when an equally good site is available, which is easy to enter and promises to provide an easy access to data (Bernard, 2005).

1.12 Structure of the Thesis

Chapter 1 gives an overview of the research in terms of background and context of the research and why the research holds significance. This chapter also talks about the problem formulation, the aim of the research, and research questions. The chapter also gives an account of how the thesis is structured.

Chapter 2 is oriented around the theoretical underpinning of the research. The core theoretical angles that the research focuses on, which are empowerment, empowerment through the Internet, and the social learning theory of Communities of Practice (CoP), are discussed in this chapter.

Chapter 3 gives a detailed account of the philosophical assumptions about what constitutes knowledge in the research, the methodology

adopted, the data collection approach that influences the choice of research methods, and the data collection tools.

Chapter 4 is about the intervention done in the field. How the empirical study was conducted through Future workshops, Internet training sessions based on Bloom's digital taxonomy, and action research workshops, is explained in chronological order.

Chapter 5 examines the barriers that women students in the research face in accessing and using the Internet. The chapter also explores the gender element of the trainer in conducting women specific ICT training in a developing context.

Chapter 6 talks about how the empowering process is conceptualized as constructing identities for women students when learning to use the Internet. Identity constructed is explained and understood through Wenger's social theory of learning.

Chapter 7 illustrates how empowerment is measured in this research context. How Measuring Empowerment Framework enables the measurement of empowerment indicators developed for the research, as well as the opportunities available for the students through the newly acquired competencies, is explained in this chapter.

Chapter 8 proposes a design for learning how to use the Internet. This design is mainly based on human interaction with technology, Internet usage by woman users in a developmental context. How can a design be facilitated to improve usage that brings value to their life, and how they can be motivated to use the Internet even after the research is concluded is also discussed in this chapter.

Chapter 9, the final chapter of the thesis, summarizes the research, concludes the research findings, and provides insights on the scope for future research.

CHAPTER 2

Theoretical Framework

The aim of this chapter is to introduce the core theoretical concepts which the present research revolves around. As the research concerns women's empowerment through learning to use the Internet, the three core theoretical angles are empowerment, empowerment through the Internet and the social learning theory of Communities of Practice (CoP) (Wenger, 1998).

As the literature on empowerment is found in diverse fields, it is significant to determine what empowerment means in this research context. In this chapter, I will give an overview of the literature on empowerment and how the Internet can bring an experience of empowerment for individuals. The fundamental elements of empowerment that holds relevance in the research such as levels of empowerment, the difference in viewing empowerment as a process or an outcome and the indicators or constructs of empowerment will be discussed. The chapter concludes by giving an overview of the Measuring Empowerment Framework (Alsop & Heinsohn, 2005), which has been used in the present research for measuring empowerment.

2.1 What is Empowerment?

There is an array of definitions of empowerment because the term is used in diverse fields such as community psychology, management studies, political theory, social work, education, feminist and women's studies, sociology as well as developmental studies (Hur, 2006; Masterson & Owen, 2006; Oxaal & Baden, 1997). What the term 'empowerment' means, or how it is achieved, is very complex and challenging to explain (Cheston & Kuhn, 2002; Sharp, Briggs, Yacoub, & Hamed, 2003). Empowerment takes different forms for different people and in different contexts (Jennings, Parra-Medina, Hilfinger-Messias, & McLoughlin, 2006; Rappaport, 1984; Zimmerman, 2000). What is seen as empowering in one context, may not be so in another (Oxaal & Baden, 1997, p. 3), and it is important to not to overlook the contextual factors of empowerment (Zimmerman, 1995).

I will give an overview of the various definitions that are found in literature on empowerment. These definitions will be discussed based on the conceptual approaches that make them distinctive.

Empowerment as Change in Power: The notion of power is considered as the root of the term 'empowerment' (Oxaal & Baden, 1997; Page & Czuba, 1999). Some authors argue that any attempt to understand the meaning of the term 'empowerment' requires us to

consider the notion of power; the meaning of empowerment depends on how power is understood and interpreted. (Charlier & Caubergs, 2007; Luttrell & Quiroz, 2009; Rowlands, 1995; Sprague & Hayes, 2000).

In the context of empowerment, the word power is an action verb that has a transformatory sound, an implicit promise of change, often for the better (Parpart, Rai, & Staudt, 2002). Power is the ability of individuals to gain more control over their lives either on their own or with the help of others; power is thus either developed or acquired (Sadan, 2004). Oxaal & Baden (1997) give a useful description of the different dimensions of power from an empowerment perspective and their respective implications in practice, which is shown in the table below. Table 2.1 shows classification of types of power and their implications in practice by Oxaal & Baden (1997).

Table 2.1. *Description of Different Types of Power and their Implications in Practice*

Dimension of Power	**Description**	**Implication in Practice**
Power over	This type of power involves an either/or relationship of domination /subordination.	Conflict and direct confrontation between powerful and powerless interest groups.
Power to	This type of power relates to having decision-making authority, power to solve problems and can be creative and enabling.	Capacity building, supporting individual decision-making, leadership etc.
Power with	This type of power involves people organizing with a common purpose or common understanding to achieve collective goals.	Social mobilization, building alliances and coalitions.
Power within	This type of power refers to self-confidence, self-awareness and assertiveness.	Increasing self-esteem, awareness or consciousness raising, confidence building.

Kabeer (1994) states that in a positive sense the 'power to' refers to people's ability to make and act on their own life choices. On similar thoughts, Sharp et al. (2003) also describe 'power to' and empowerment as the ability to act in particular ways. In a negative sense, 'power over' refers to the capacity of some actors to override the agency of others (Kabeer, 1994).

Empowerment is predominantly viewed as a process to acquire power individually and collectively – it designates individual and groups the ability to act independently and also enables them to make their own decisions through the means and processes needed (Charlier & Caubergs, 2007). For Sadan (2004), empowerment is a process of transition from a state of powerlessness to a state of relative control over one's life, destiny, and environment.

Empowerment as Gender Development: Empowerment has most commonly been associated with alternative approaches to development, where the concern was for grassroots, community based initiatives and projects (Parpart et al., 2002). Empowerment has been identified as one of the key elements in poverty reduction and is regarded as the primary development assistance goal (Malhotra, Schuler, & Boender, 2002). From a development approach perspective, empowerment is viewed as the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable the institutions that affect their lives (World Bank, 2002). In the developmental context, the concept of empowerment has mainly been concerned with developmental issues of gender because women represent majority of the world's poor and illiterate and are generally more vulnerable. Because the concept is heavily associated with gender, many scholars restrict the usage to gender issues (Luttrell & Quiroz, 2009). Cheston & Kuhn (2002) describe that in order for a woman to be empowered, she needs access to the material, human, and social resources necessary to make strategic choices in her life. In the developing countries women's empowerment is considered to be an integral part of the overall economic development strategies (Banerjee & Ghosh, 2012).

Empowerment as the Ability to Make Life Choices: For some scholars, empowerment is predominantly about the change which individuals experience when they are able to make choices and accomplish something they could not achieve before, thus gaining control of their life. Rapport's definition is widely quoted in terms of viewing empowerment as gaining control over life. For Rapport (1987) "empowerment is a process, a mechanism by which people, organizations, and communities gain mastery over their affairs" (p.

122). Kabeer (2005) defines that "to be disempowered means to be denied choice, while empowerment refers to the processes by which those who have been denied the ability to make choices acquire such an ability" (p. 13). For Pinkett & O'Bryant (2003) "empowerment of the individual begins with an individual's belief that what they are trying to accomplish is in fact possible" (p. 10). Alsop & Heinsohn (2005) define empowerment as "a person's capacity to make effective choices; that is, as the capacity to transform choices into desired actions and outcomes" (p. 4). Page & Czuba (1999) states that "empowerment is a multi-dimensional social process that helps people gain control over their own lives"(p. 4).

Empowerment as Development of Skills and Competencies: Some scholars view empowerment as something that happens inside individuals with the development of competencies, knowledge, skills and change in attitudes and behaviors. For Zimmerman & Rappaport (1988) "empowerment is a construct that links individual strengths and competencies, natural helping systems, and proactive behaviors to matters of social policy and social change" (p. 726). Empowerment is expressed as attitudes, knowledge, and behaviors by Koren, DeChillo, & Friesen (1992). Staples (1990) suggests that individual empowerment includes both the development of skills and abilities as well as psychological development such as feeling good about themselves, increased sense of personal dignity, self-respect and self-esteem.

Empowerment through the Internet: Since the present research concerns how women students can be empowered through using the Internet, I will give a literature review of what it means to be empowered through the Internet. Empowerment through the Internet refers to how the Internet can enable people to do things which they found difficult to achieve before (Amichai-Hamburger, 2008).

Li, Pow, Wong, & Fung (2009) state that empowerment through the Internet can be seen as a way to address the growing awareness and demand for preparing individuals to effectively participate in the emerging global knowledge economy. The Internet can facilitate empowerment for individuals at the individual as well as the inter-personal level (Amichai-Hamburger, McKenna, & Tal, 2008). At the personal level, individuals become empowered through reframing their identity (through online identity game environments) and by increased self-efficacy and skills (through online communication and interactions). At the inter-personal level empowerment can lead to behavior change and shifts in attitudes, the strengthening of existing relationships, and the formation of new ones (Amichai-Hamburger et

al., 2008).

Users' empowerment through the Internet can occur because of several factors that characterize the Web environment, according to Barak & Sadovsky (2008). They argue that factors like invisibility, anonymity, continuous and constant availability, easy access to massive amounts of information, and broad attainability of individual and group support through the Internet can help in producing strong psychological effects on individuals which in turn can foster empowerment. Thus using the Internet can bring an empowering experience for diverse groups of people in different ways:

- For Women: Siddiquee & Kagan (2006) found that the Internet brings empowerment for women at the intrapersonal level through necessary skills and competency to use the Internet. Empowerment for the women, who were refugees during the study, occurred through their gaining greater autonomy and control around the experience of living in the UK. In another study, the Internet brought an empowering experience for women who were victims of domestic violence in Bolivia through online consulting services; the Internet provided the anonymity which enabled them to find information and support without risking public admonishment and shame (Wamala, 2012).
- For Students and Teachers: Students and teachers were observed to be empowered through the use of online wiki-based textbooks in a study done by Ravid, Kalman, & Rafaeli (2008). In their study they found that this type of collaborative online technology disrupt the power relations and value chain in production, ordering and maintenance of curricular material leading to potential empowerment of both teachers and students.
- Through Political Participation: Opportunities to take part in political interactions and civil activity through the Internet by e-voting and using various e-governmental tools has been observed to bring empowering effects for citizens (Amichai-Hamburger et al., 2008). Training women indigenous leaders in Bolivia to use the Internet for political leadership succeeded in building the women's self-worth and thereby empowering them, as it resulted in gaining key political positions at local, regional and national levels (Wamala, 2012).
- For the Disabled: The Internet is perceived as an empowering agent for the disabled, as characteristics associated with online communication such as, availability, and multimodality enable disabled people in various areas of disability to take advantage of the medium without being identified as disabled, thus gaining more security and a sense of equality (Barak & Sadovsky, 2008).

- By Creating Identity in Online Environments: In their study to discover self-representation in the nonymous online environment Facebook, Zhao, Grasmuck, & Martin (2008) found that the Internet provides opportunities for identity production that can be used to overcome limitations that are inherent in face-to-face situations and thus enable identity empowerment.
- Group Level Empowerment: Empowerment through the Internet at the group level can occur through finding similar people which can reduce the feeling of loneliness and alienation by finding more social contacts (Amichai- Hamburger, 2008).

Thus the "Internet is not just technology; it is an efficient vehicle to promote a better life for many human beings" (Barak & Sadovsky, 2008, p. 1812). However, individuals are not going to be empowered just by getting them connected to the Internet. It has been observed that when it comes to women users, access statistics are not an indicator of women's empowerment (Amichai-Hamburger et al., 2008; Melhem et al., 2009). Unless an individual takes advantage of the empowering tools and opportunities, which are available through the Internet, they cannot realize the full potential of the Internet technologies (Amichai-Hamburger et al., 2008; Hill et al., 2004).

2.2 Interpreting Empowerment and the Concept of Power in the Research Context

In the context of empowerment through the Internet, I will interweave the concepts of power and empowerment to describe what this means for the students in this research study. In this research context, students are in a situation where they are not taking advantage of the available Internet access facilities. The focus of the research is to uncover how using the Internet can bring empowering experiences for the student participants in the research. In the context of this research study, information and knowledge is considered as power. Knowledge plays a significant role in empowering people (Singh, 2005). The ultimate significance of the network age is that "it can empower people by enabling them to use knowledge and by contributing to the world's collective knowledge" (UNDP, 2001b, p. 8). "Possessing knowledge is empowering, while the lack of knowledge is debilitating" (Nath, 2001, p. 318).

Any increase in knowledge for the students will thus in itself be empowering from the perspective of this power concept. Powerlessness of the students in the research context is viewed as not having the skills and required knowledge to use the Internet for their benefit.

Powerlessness for them is also the result of a lack of consciousness on what difference it makes to be an Internet user because they simply have not had Internet usage experiences in their life.

For the students, empowerment based on the concept of power will be a transition from the state of powerlessness to state of power. There are two types of power the students' experience. The students experience 'power within', which is mainly about the change that they feel through the Internet usage experiences, bringing an increased individual consciousness by allowing them to identify themselves as Internet users. The students also experience power within in the form of improved Internet efficacy, reduced technophobia and increased motivation.

Students gain "power to" in terms of improved knowledge and skills to use the Internet. The power to use the Internet enables the students to use the information available through the Internet and improve their academic performance as well as to use it for other undertakings in life, which can make them better informed and bring more opportunities that can improve their quality of life.

Through the research intervention, students will thus be empowered through gaining networked competence (power to), which will reduce their technophobia in using the Internet. This will in turn improve their beliefs of Internet efficacy that motivates them to use the Internet in the future through constructing identities as Internet users (power within).

I will discuss some of the fundamental elements of empowerment that need to be addressed and holds relevance in this research context. Because of the complexity of the term empowerment, it is expected of researchers to place emphasis on concepts that are relevant to understanding the phenomenon of empowerment and specify the dimension and levels of empowerment under a study or intervention (Prestby, Wandersman, Florin, Rich, & Chavis, 1990). This can help in demystifying the concept of empowerment and narrow the focus of empowerment to the specific programs and projects (Page & Czuba, 1999).

Figure 2.1 shows the concepts that are relevant for understanding empowerment in this research context.

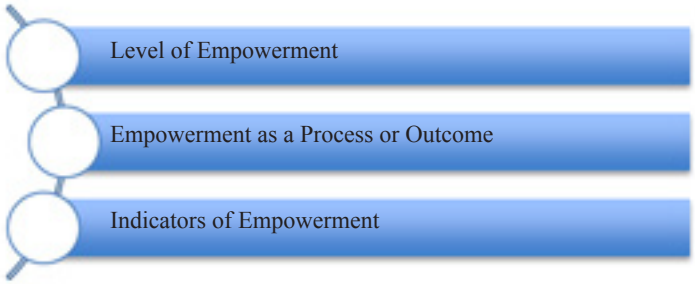

Figure 2.1. *Components of empowerment relevant for this research*

2.3 Level of Empowerment

It is important to address at what level empowerment is happening, as empowerment is a multi-level construct that may be applied to personal or individual, inter-personal, organizational and community or collective levels (Hur, 2006; Jennings et al., 2006; Prestby et al., 1990; (Zimmerman & Rappaport, 1988). The components leading to empowerment at all these levels can include both individual and social factors (Hur, 2006). Each level will have related outcomes of empowerment and is not experienced in the same way (Jennings et al., 2006).

I will give a brief overview of empowerment at two levels, the individual level and the community or collective level. An understanding of these two levels is significant for this research context because it is on the individual level that empowerment is measured and not as a group.

Empowerment at the individual level of analysis is a process by which individuals gain mastery and control over their lives, and a critical understanding over their environment (Zimmerman, Israel, Schulz, & Checkoway, 1992). Zimmerman (2000)states that "at the individual level empowerment includes participatory behavior, motivations to exert control and feelings of efficacy and control" (p. 59). Individual empowerment is defined by the constructs self-determination, decision making, and self-sufficiency, encompassed setting goals, gathering information, defining needs, and implementing decisions by Becker, Kovach, & Gronseth (2004). While individual empowerment is also

addressed as personal empowerment by, for example, Boehm & Staples (2004) who define that personal empowerment relates to the way people think about themselves as well as the knowledge capacities, skills, and mastery that they actually possess. When individuals develop the ability to redefine themselves and act efficiently for themselves "a process of personal development" transpires which will bring empowerment at the individual level (Staples, 1990).

In the literature, collective empowerment and community empowerment is used interchangeably, and imply the same empowering outcomes. Collective empowerment occurs within families, organizations, and communities, when members come together, break the silence, relate to each other, help and learn together and develop skills for collective action while providing mutual support and improving their collective well-being (Hur, 2006; Jennings et al., 2006). There is an increased control of people as a collective over outcomes important to their lives through the collective process, and the socio-political structure and social change is the area of concern in community empowerment (Sadan, 2004; Zimmerman, 2000).

2.3.1 Empowerment at the Individual Level for the Student Participants

The focus of the research was individual empowerment and not the collective empowerment of the class. Therefore, the personal transformation and change that happens with the students was the core element, and the interventions aimed at the empowering the students were intentional and aimed at equipping students with Internet usage skills with their active participation. Thus, empowerment can be seen as an intentional process that is directly linked to individual achievement and where the individual is an active participant rather than an observer (Duvall, 1999).

The students in the research context were to be empowered through helping them gain "power to" through knowledge and skills and "power within" through increased beliefs of self-efficacy, reduced technophobia, motivation to use the Internet in the future and also by constructing identities as an Internet user by learning to use the Internet. Thus, the focus of the research is on individual or personal empowerment that can make the students to use the Internet effectively for improving the quality of life.

2.4 Empowerment –An Outcome or/and Process

Similarly to the different viewpoints on the concept of empowerment, another area related to empowerment which scholars differ on is whether to view it as process, outcome or both. A distinction between empowering processes and outcomes is very important in order to understand the concept of empowerment (Zimmerman, 2000).

Firstly, I will define empowerment processes as opposed to outcomes based on the definitions (Zimmerman, 2000; 1995), and then I will give an overview of whether empowerment is viewed as a process, or an outcome and some as both process and outcome. Empowerment processes are those where people create or are given opportunities to control their own destiny and influence the decisions that affect their lives. The process is empowering if it enables the people to develop skills making them independent problem solvers and decision makers, and it thus relates to how people, organizations and communities become empowered (Zimmerman, 2000; Zimmerman, 1995). Empowerment outcomes denote to operationalization of empowerment and refer to the specific measurements, both quantitative and qualitative, that are used to study the effects of interventions that are designed to empower the participants(Zimmerman, 2000).

Both process and outcome differ across levels of analysis (Zimmerman, 2000). While outcomes can be measured through direct indicators, measuring the process is often difficult (Malhotra et al., 2002; Malhotra & Schuler, 2005). Some scholars on empowerment argue that empowerment is predominantly a process; some state that empowerment should be viewed as an outcome; and some claim empowerment is both a process and an outcome.

Carr (2003) claims that the process-oriented definitions are prominent in understanding empowerment and argues that empowerment is a process which is cyclical rather than linear. Hur (2006) argues that "the empowerment process is not a constant, but rather a continuing, development that involves many changes and whereby an individual or group is able to strengthen and exercise the ability to act to gain control and mastery over life, community, and society" (p. 535).

Scholars such as Cattaneo and Chapman (2010), Lord and Hutchison (1993) and Oxaal and Baden (1997) also view empowerment as a process, which is iterative and as a bottom-up rather than a top-down strategy whereby individuals achieve increasing control of various aspects of their lives. Other authors view empowerment as an outcome that can be measured against predetermined goals (Conger & Kanungo,

1988; Hashemi, Schuler, & Riley, 1996; Jejeebhoy, 2000).

However, empowerment can also be viewed both as a process and an outcome. Staples (1990) state that empowerment is dynamic, dialectical and an ongoing process, but it is also an outcome that can result in attainment of particular personal, social, and political goals. Boehm and Staples (2002, 2004) describe empowerment as both a process and an outcome from the perspective of power. The process concerns the experiences and activities through which individuals gain power, while outcomes are seen as end products whereby a measure of power is achieved. UNESCO (1995a) states that on the one hand, empowerment is a goal for many development programs, and on the other hand, it can also be conceived as a process that people undergo which eventually leads to changes. Rai, Parpart and Staudt (2007) also view empowerment as a process that is fluid and unpredictable as well as an outcome which can be measured against expected accomplishments. Scholars such as Pinkett and O'Bryant (2003), Van Uden-Kraan et al. (2008) also consider empowering outcomes to be inextricably tied to empowering processes, thus arguing that empowerment is a process as well as an outcome.

From the point of view this research, the empowerment experienced by the students was observed to be a process as well as an outcome.

In the research, the empowering process for the students was constructing identities through learning to use the Internet through training and workshops. This empowering process is perceived as the opportunities given to the participants that empower them to make decisions that may affect their lives through using the Internet. The empowering outcome was to happen through them gaining networked competence, increased self-efficacy, reduced technophobia, and motivation to use the Internet in the future, which are seen as measures to understand the effect of the research interventions.

Based on my research, I thus believe that it is possible to capture and measure the presence of individual empowerment, as suggested by Staples (1990), and that empowerment outcomes are the results of the empowerment process, as suggested by (Zimmerman, 2000; Zimmerman, 1995).

2.4.1 The Empowering Process - Learning as Negotiating Identities

The research also draws upon Wenger's social learning theory of communities of practice (CoP) to explain how constructing identities through learning to use the Internet can be viewed as an empowering process for the student participants. Learning for Wenger is not just accumulation of skills and information, but also a process of becoming. The rationale for using CoP to understand the empowering process in this research is based on my belief that CoP can help in understanding how the students negotiate meaning, how they interpret the experiences of Internet usage and how they understand and see themselves as Internet users in this specific socio-cultural context.

It is significant to understand what a community of practice means and to discuss how the concept can contribute to understanding how empowerment through learning to use the Internet can create transformed and changed identities for the participants.

According to Wenger (2006), "Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor: a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a network of surgeons exploring novel techniques, a gathering of first-time managers helping each other cope " (p. 1).

CoP has its roots in the situated theory of learning, which is alternative approach to the dominant cognitive perspectives on learning. Situated learning theory considers learning, not as a process of socially shared cognition that results in the internalization of knowledge by individuals, but as a process of becoming a member of a sustained community of practice (Lave, 1991). The theory of situated learning claims that knowledge is not a thing or set of descriptions or collection of facts and rules but rather describe knowledge as dynamically constructed, as we conceive what is happening to us (Clancey, 1995).

In CoP, learning is seen as a form of social participation. "Participation here refers not just to local events of engagement in certain activities with certain people, but to a more encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities"(Wenger, 1998, p. 4). Wenger describes that social participation determines what we do, what we are and how we interpret what we do. There

are three fundamental characteristics that are crucial for a community of practice. A domain, which means identity is defined by a shared domain of interest; a community where members build relationships and where they engage in joint activities and discussions by following their domain of interest; and a practice, which means that the members develop a shared repertoire of resources which can be experiences, tools, stories or anything which can address a recurring problem (Wenger, 1998). CoP mainly has four components, which characterizes social participation as a process of knowing and learning.

Figure 2.2 shows the four components and what learning means in CoP (Wenger, 1998).

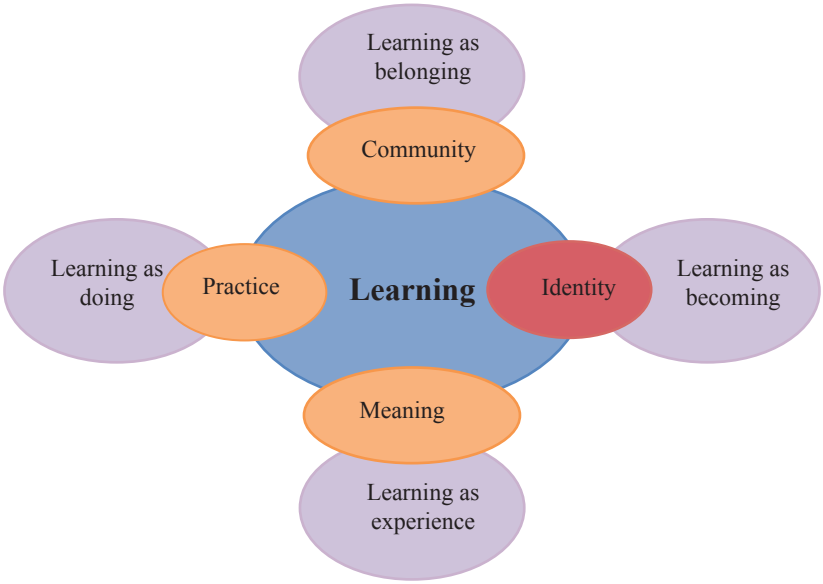

Figure 2.2. *Components of CoP according to Wenger (1998)*

- Meaning: a way of talking about our (changing) ability – individually and collectively – to experience our life and the world as meaningful.
- Practice: a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action.
- Community: A way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence.
- Identity: A way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities.

Wenger describes that any of these peripheral components can be switched with learning and could be placed in the center as the primary focus.

I am interested in the identity element of Wenger's learning theory, which is concerned with learning as negotiating new identities, and the objective of my research is to uncover how learning to use the Internet can bring empowering experiences for the students through negotiating identities. Wenger describes that identity includes the ability and inability to give meanings which describe the communities, and form of belonging. In Wenger's view, learning is ultimately about the kind of person we become. Wenger describes that since learning transforms who we are and what we can do, it is an experience of identity. Through this formation of identity, learning can become a source of meaningfulness and of personal and social energy. Thus, any form of learning involves a change of identity for the members of the community.

Since the research focuses on learning to use a technology, which is the Internet, in a developing country context, a learning approach based on identity theory can bring empowering effects as the students will start to identify themselves as Internet users; this may motivate them to use the Internet even after the project is concluded. As regards the use of technology in the field of education, some scholars are of the opinion that prominence should be given to identity rather than skills, which means that learning should be conceptualized as process of identity change rather than a process of gaining and transferring information through technology (Brosnan & Burgess, 2003; Mayes & Fowler, 2006).

2.4.1.1 Characteristics of Identity

Identity change for the students in the research will be discussed based on the characteristics or analytical components of the identity concept according to CoP. How the students identify themselves as Internet users through these analytical components of identity is thus perceived as the empowering process in this research. According to Wenger, the characteristics or analytical components of identity are as follows:

Negotiated Experience: Identity emerges by negotiating the self. Identity is a "layering of events of participation and reification by which our experience and its social interpretation inform each other" (Wenger, 1998, p. 151). Identity is mainly formed through "a complex interweaving of participative experience and reificative projections,

which emerges as we encounter our effects on the world and our relations with others (Wenger, 1998, p. 151)".

Community Membership: "Membership constitutes our identity not just through reified markers of membership but more fundamentally through the forms of competence that it entails" (Wenger, 1998, p. 152). "When we are with a community of practice of which we are a full member, we are in a familiar territory" (Wenger, 1998, p. 152). Membership also makes them recognize themselves as competent and aids in knowing how to engage with others. These dimensions of competence, which can be seen as dimensions of identity, also have their inverse. When we come into contact with new practices, we are also being faced with the unfamiliar.

Learning Trajectory: Identity is formed through participation and reification, and when participants go through different forms of participation, their identities become trajectories. These trajectories are not something that can be foreseen, nor is it a specified path or destination, rather it is something ongoing. Wenger identifies five types of trajectories. 1) Peripheral trajectories; when members cannot participate fully but their kind of access to the community and practice contributes significantly to their identity. 2) Inbound trajectories; when new people join with an expectation of becoming full participants even though their present participation may be peripheral. 3) Insider trajectories; when full participants renegotiate their identities calling for new demands, inventions and events for adding to the existing practices.4) In boundary trajectories, members link different communities of practice. 5) Outbound trajectories involve participants planning to move out of a community of practice, developing new relationships and finding a new position with respect to the community. Identity as a learning trajectory is about who we are through realizing where we have been and where we are going.

Nexus of Multimembership: According to Wenger, we all belong to different communities of practice some as full participants and some peripherally. All these different memberships contribute in the production of identities. Thus for Wenger, identity is an experience of multimembership and is defined by "who we are by the ways we reconcile our various forms of membership into one identity" (Wenger, 1998, p. 149)

Local – global Interplay: The practices in a community are not confined to the local but to a broader context of things. Similarly, identity formed in a specific community of practice is just not enclosed to that community. Members engage and participate to find out

how these fit into a broader scheme of things. "In our communities of practice we come together not only to engage in pursuing some enterprise but also to figure out how our engagement fits in the broader scheme of things"(Wenger, 1998, p. 162). Thus, in this research empowerment as a process is seen as how learning to use the Internet can build or transform identities for the students, which in Wenger's (1998) concept is a "way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities" (p. 5).

2.4.2 Empowered Outcome for the Students

As discussed earlier, in this research study the empowered outcome was measured on reduced technophobia, increased self-efficacy, motivation to use the Internet in the future and gaining networked competence for the students. These factors are measures to understand the effect of the interventions, quantitatively as well as qualitatively (Zimmerman, 1995). I consider these measurable outcomes as constructs of empowerment, which will be explained in detail in section 4.

Figure 2.3 shows the empowering process and empowered outcomes in this research context.

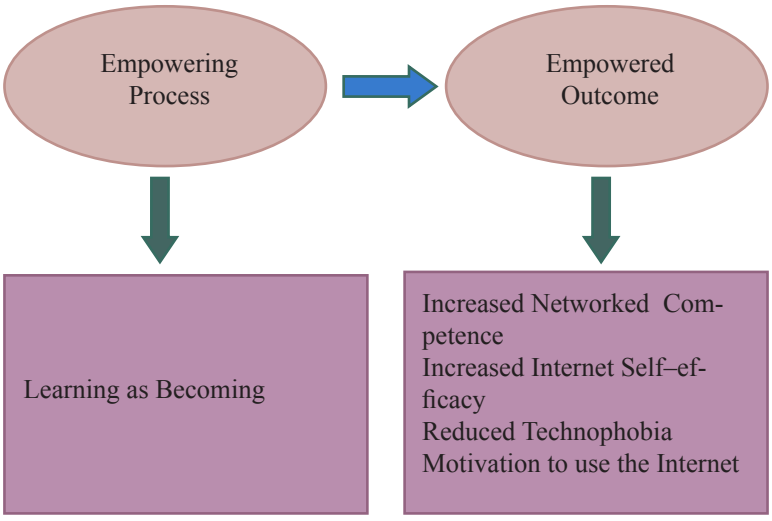

Figure 2.3. *Process and outcomes of empowerment for the students in this research*

2.5 Constructs or Indicators of Empowerment

Indicators are criteria or measures against which changes can be assessed. They may be pointers, facts, numbers, opinions or perceptions – used to signify changes in specific conditions or progress towards particular objectives (Demetriades, 2007). Any project that has a developmental goal such as empowering the participants should have clearly defined indicators or constructs of empowerment.

Empowerment is a multi-level construct and there are various dimensions to it such as economic, socio-cultural, behavioral, inter-personal, legal, political and psychological (Hur, 2006; Malhotra et al., 2002; Prestby et al., 1990; Zimmerman, 2000; Zimmerman, 1995). Indicators should thus address the multidimensional character of empowerment and take in to consideration all the aspects of what empowerment means in the particular context. The indicators developed should cover differential effects of interventions on distinct aspects of empowerment (Malhotra et al., 2002). The indicators vary according to what the project intends to uncover in the study.

Table 2.2 gives some examples of various indicators or constructs of empowerment found in literature review. Some authors have used only one construct or indicator for explaining empowerment and some use multiple constructs or indicators of empowerment, which is explained in the table below.

Table 2.2. *Indicators of empowerment mentioned in the literature*

Individual Indicator	**Authors**
• Self confidence	(Larson, Walker, & Pearce, 2005)
• Self-determination	Sprague & Hayes, 2000
• Promotion of Competence	(Breton, 1994)
• Participation	(Prestby et al., 1990)
Multiple Indicators	**Authors**
• Academic success • Bicultural identity	(Diversi & Mecham, 2005)
• Mastery • Self-determination	(Boehm & Staples, 2004)

• Empowerment in household and community spheres • Political and legal awareness • Decision making power • Political campaigning • Participation in public protest	(Hashemi et al., 1996)
• Self-determination • Self-sufficiency • Decision making abilities	(Becker et al., 2004)
• Knowledge about women's rights • Women's understanding of their conditions of subordination and the causes of such conditions at both micro and macro levels of society • Knowledge about the moral values of society	(UNESCO, 1995b, 1995c)
• Advocacy • Consciousness raising	(Moreau, 1990)
• Extent of sharing of domestic work by men • Extent to which a woman takes control of her reproductive functions and decides on family size • Extent to which a woman is able to decide where the income she has earned will be channeled to • Feeling and expression of pride and value in her work • Self-confidence and self-esteem • Ability to prevent violence	(UNESCO, 1995)

The development of a universal or global measure of empowerment is not possible, and no studies have produced general empowerment measures, since empowerment may not mean the same thing for persons, organizations and communities (Koren et al., 1992; Zimmerman, 1995). Empowerment is thus multifaceted and its essence cannot be captured by a single concept (Thomas & Velthouse,

1990). The indicators developed should also cover differential effects of interventions on distinct aspects of empowerment (Malhotra et al., 2002). Zimmerman (1990;1995) advocates that researchers should adopt theories and methods from other disciplines as to understand the constructs of empowerment in its entirety.

Constructs or Indicators of Empowerment in the Research Context : The two constructs or indicators of empowerment in the research were developed based on reflections and discussions with the students during the future workshop (refer to chapter 4). The indicators that were developed based on student's reflections were: Networked Competence and Technophobia; the other two indicators, developed from my observations and discussions with the students, were: Internet Self-efficacy and Motivation to use the Internet.

Figure 2.4 shows the empowerment indicators that have been developed for the research:

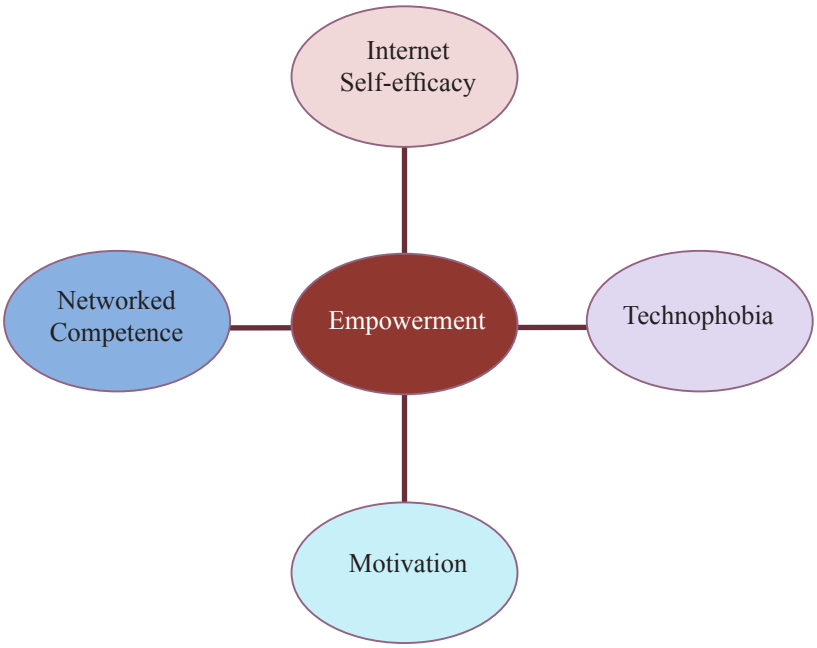

Figure 2.4. *Indicators of empowerment developed for the research*

The indicators developed for the research represent multiple dimensions. They are explained using theoretical constructs from the literature to understand what empowerment means from the perspective of this research.

2.5.1 Technophobia

Technophobia is avoidance of new technologies or computers by individuals mainly because of negative attitudes and anxiety even when given an opportunity to use them (Brosnan, 1998). One of the most popular and widely used definitions of technophobia is Rosen & Weil's (1990); they explain technophobia as anxiety about current or future interactions with computers or computer-related technology, negative global attitudes about computers, their operation or their societal impact and/or, specific negative cognitions or self critical internal dialogues during computer interaction or when contemplating future computer interaction. Typically an individual who resists using computers when given an opportunity is called a "technophobe" (Brosnan, 1998), and he/ she is characterized as someone who possesses high levels of computer-related anxiety, hold negative attitudes towards computers and avoid interaction with technology whenever possible (Brosnan, 1998).

Figure 2.5 shows factors such as computer anxiety and attitudes towards computers that hold relevance for understanding the students' technophobia in the research context.

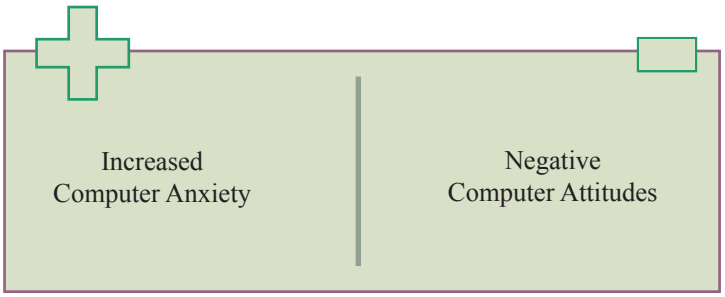

Figure 2.5. *Factors of technophobia*

2.5.1.1 Computer Anxiety

Computer anxiety tends to make people in many societies stay away from computers despite of the big infusion and availability of computers (Rosen & Maguire, 1990; Rosen & Weil, 1995; Tekinarslan,

2008). (Brosnan, 1998) defines computer anxiety as an irrational fear invoked by computers which is indicated by behaviors of avoidance of computers and general areas where computers are located, being excessively cautionary about computers, and attempts to cut short the necessary use of computers.

People who are pessimistic about the effect of computers on the society are more likely to feel more anxiety than those with a positive outlook (Farina et al., 1991). An individual's computer anxiety, which makes them doubt their capabilities to use computers, will lead to forming negative attitudes about computers and technology (Cooper, Joel & Weaver, 2003). It has been observed that higher anxiety levels with using computer, affects computer learning skills negatively (Harrington, McElroy, & Morrow, 1990; Torkzadeh & Koufteros, 1994). Sam et al., (2005) similarly argue that the performance of participants with higher computer anxiety might be poorer than those with little or no computer anxiety. Internet anxiety is closely related to computer anxiety (Joiner et al., 2005; Thatcher, Loughry, Lim, & McKnight, 2007). Individuals with lower computer anxiousness tend to show more positive attitude towards the Internet (Sam et al., 2005).

Many studies indicate that women show more computer anxiety than men (Bradley & Russell, 1997; Broos, 2005; Busch, 1995; Coffin & MacIntyre, 1999; Durndell & Haag, 2002; Farina et al., 1991; Jackson et al., 2001; Rosen & Weil, 1995). It has been observed that women tend to be more uncomfortable, nervous and feel helpless when they are around computers (Broos, 2005; Shashaani & Khalili, 2001). The fact that women tend to be more anxious compared to men is also supported by Chua, Chen & Wong (1999). As regards Internet usage women reportedly tend to show higher levels of discomfort with the Internet and they show more anxiety (Chou, 2003; Jackson et al., 2001; Schumacher & Morahan-Martin, 2001; Tsai et al., 2001).

2.5.1.2 Computer Attitudes

Attitude is defined as "the degree to which a person has a favorable or unfavorable evaluation of the behavior in question"(Ajzen & Madden, 1986, p.454). Negative attitudes are defined as "anti-computer" attitudes which is basically dislike of computers, and positive attitude are defined a pro-computer attitudes (Brosnan, 1998). The acceptance of any technology, however capable it may be, depends on users' positive attitude towards it (Liaw, 2002). Positive attitudes to computers can to a large extent make individuals use computers more through more computer experience. As people who have positive attitudes about computers mainly stay away from using computers because of lack of skills or knowledge to use computers,

they are termed as uncomfortable users by Rosen, Sears & Weil (1993). The significance of understanding the context is mentioned by Kay (1993), who states that since different populations have different needs, goals, and motivations, context is a determinable element in relation to understanding computer attitude. It has been observed that when individuals have more positive attitudes toward computers, they tend to have more positive attitudes toward Web environments (Liaw, 2002).

Studies have shown significant gender differences that do not favor women in terms of attitudes toward computers, technology and Internet, where men have more positive attitudes (Broos, 2005; Coffin & MacIntyre, 1999; Krendl, Broihier, & Fleetwood, 1989; Sherman et al., 2000). Generally, men tend to show a more positive attitude in their willingness to learn and more enthusiasm for computers (Shashaani & Khalili, 2001). Women tend to have a less favorable attitude about the importance of computers and technology than males (Jackson et al., 2001). The lower degree of positive attitudes of women can lead to low motivation to learn computer skills (Campbell, 1990). This gender difference in attitude is also seen concerning Internet use with men showing a more positive attitude towards Internet and Web environments (Durndell & Haag, 2002; Jackson et al., 2001; Liaw, 2002; Peng, Tsai, & Wu, 2006; Tsai et al., 2001).

2.5.2 Internet Self-Efficacy

The empowerment indicator of Internet self-efficacy can be described using the self-efficacy theory of Albert bandura (1977, 1982). Self-efficacy theory states that an individual's performance accomplishment of the task is dependent on how he or she judges their capabilities. Bandura states that self-percepts of efficacy influence thought patterns, actions and emotional arousal. People tend to avoid activities which they believe exceeds their capabilities and instead take up tasks which they judge themselves capable of managing (Bandura, 1982). Self-efficacy also determines how much effort people put in the task and how persistent they are in facing the obstacles in achieving the task (Bandura, 1977). The higher the individuals' perceived self-efficacy, the higher the performance accomplishment and the lower the emotional arousal (Bandura, 1982). An individual's stress and anxiety levels when they engage in a task is also influenced by the efficacy beliefs (Pajares, 1997). Any activity than improves an individual's self-efficacy beliefs can make them more powerful (Conger & Kanungo, 1988).

Self-efficacy plays a significant role in how people use technology. Computer self-efficacy can be defined as a persons belief of one's capability to use computers (Compeau & Higgins, 1995). It can be seen as a "measure of an individual's judgment of their own abilities with computers, which is an assessment of self-confidence" (Durndell et al., 2000, p. 79). Computer self-efficacy is a significant factor related to acquisition of computer skills (Miura, 1987) and in determining the persistence in studying computer skills (Brosnan, 1998). Confidence about computer skills may affect the willingness to learn about computer skills and heightened self-efficacy leads to more efforts on the part of individuals toward learning new computer concepts (Sam et al., 2005). This is also supported by Shashaani & Khalili (2001) whose opinion is that low confidence levels in learning and using computers will discourage an individual from undertaking a computer task. Individuals with lower confidence levels in their ability to use computers will perform poorly in performing a computer task (Sam et al., 2005). Thus, an individual might execute a computer task poorly, quit at the first sign of difficulty in using a computer and avoid computer usage because of low confidence, which comes from low self-efficacy beliefs (Coffin & MacIntyre, 1999).

Studies indicate that women show lower perceptions of self-efficacy levels in using computer compared to men (Busch, 1995; Coffin & MacIntyre, 1999; Jackson et al., 2001; Miura, 1987; Torkzadeh & Koufteros, 1994). Women tend to show less confidence levels than men even after a computer experience; this shows that sometimes having a computer experience does not change women's attitudes (Broos, 2005; Volman & van Eck, 2001).

Self-efficacy also influences a person's Internet usage. "Internet self-efficacy is a user's perception about his/her own ability in using the Internet" (Tsai & Tsai, 2003, p. 48). It is basically a person's judgment of his or her ability to apply Internet skills in a more encompassing mode, such as finding information or troubleshooting search problems (Eastin & LaRose, 2000). Individuals with higher Internet self-efficacy have been observed to have better online information searching strategies (Tsai & Tsai, 2003, p. 48). Savolalinen (2002) is of the opinion that self-efficacy is very relevant to users who are not using the Internet for information seeking but who are merely interested in using the Internet. Internet self-efficacy is also an important factor in predicting an individual's motivation in Web based continuing learning (Liang & Wu, 2010).

Internet self-efficacy is a very crucial factor in closing the digital divide between experienced Internet users and novices (Eastin & LaRose, 2000). Understanding the level of Internet self-efficacy can be helpful in situations where there is a gap between the potential of the Internet and its actual use (Gholamreza Torkzadeh & van Dyke, 2001). When individuals have a high self-efficacy about Internet usage, they tend to use the Internet more, which in turn strengthens their belief in the usefulness of the Internet and the ease of Internet use(Ramayah, Zainuddin, & Fok, 2003)

The pattern of gender gap in efficacy levels in computers is extended when it comes to using the Internet, where women show lower self-efficacy and confidence levels than men (Cheong, 2007; Durndell & Haag, 2002; Jackson et al., 2001; Liaw, 2002; Schumacher & Morahan-Martin, 2001; Shashaani & Khalili, 2001; Tsai et al., 2001).

2.5.3 Motivation

To describe what the empowerment indicator "motivation" means in this research, the theoretical underpinning from Bandura's (1977) social cognitive theory and the 'perceived usefulness' and 'perceived use' of using information technology from the technology acceptance model developed by Davis (1989) are used.

Bandura (1994) states that human motivation is cognitive as people motivate themselves and guide their actions anticipatorily by the exercise of forethought. "Future events cannot be causes of current motivation or action, but by cognitive representation in the present, conceived future events are converted into current motivators and regulators of behavior" (Bandura, 1991, p. 71). Bandura elucidate that there are three different forms of cognitive motivators on which three different theories have been built to explain motivational effects. They are attribution theory, expectancy-value theory and goal theory (Bandura, 1991, 1994).

Expectancy-value theory is used to describe what motivation means for the participants in this research study. According to Banduras' expectancy-value theory, motivation is regulated by the expectation that a given course of behavior will produce certain outcomes and how those outcomes are valued (Bandura, 1991). However, the motivating influence of expectancies is partly governed by self-beliefs of efficacy, as people act on their belief of what they can do and what the expected outcomes from their actions are. Self-beliefs of efficacy thus play a key role in self-regulation of motivation. The higher the expectancy that

certain behaviors can secure specific outcomes and the more highly those outcomes are valued, the greater is the motivation to perform the activity (Bandura, 1991).

The theory of motivation also extends to the behavioral usage of technology. When it comes to technological use, people use technology if they find it useful and if they value technology. Davis (1989) developed the constructs of 'perceived usefulness' and 'perceived ease of use' to describe this behavioral use of technology. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" while perceived ease of use, in contrast, refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Thus, people will be motivated to use technology if they believe that the technology is going to bring value to their lives and its usage is also less cumbersome.

Thus motivation to use computers from a cognitive perspective can be explained through the motivational constructs of expectancy, self efficacy and values (Coffin & MacIntyre, 1999). While expectancy of success is the performance expectation through computer use, self-efficacy for learning refers to a person's perception in his ability to perform a computer task and the value attached with the computer task is one's perception of how important and useful the computer task is going to be (Coffin & MacIntyre, 1999). These constructs will influence the behavioral intention to use the technology (Ramayah, et al., 2003). Women tend to show lower perception of task value and are less motivated as regards to computer usage (Coffin & MacIntyre, 1999).

Perceived usefulness and perceived use are seen as the main driver when it comes to Internet usage (Ramayah, et al., 2003) . The significance of perceived usefulness influencing the decision to use the Internet is also indicated by Teo, Lim and Lai (1999). The outcome expectancies of Internet use are influenced by increased levels of self-efficacy which in turn are influenced by an increase in Internet use (Eastin & LaRose, 2000). However, experiences with computers do not always have any direct impact on the perceived usefulness and perceived use of the Internet as individuals who do not have much computer experience can still believe that the Internet will benefit them and will add value to their lives (Ramayah, Zainuddin, et al., 2003).

For the students in the research, motivation to use the Internet in the future is dependent on how confident they feel in their abilities to accomplish a task which can bring them successful results and how they perceive that Internet usage will bring value to their life in future.

Motivation is also determined by the fact that students see using the Internet as less burdensome.

2.5.4 Networked Competence

Access to the Internet is not only about physical access and being connected to the Internet; it also includes the required online or digital skills to use the medium effectively and efficiently (Hargittai, 2002, 2003; van Deursen & van Dijk, 2009; Warschauer, 2002). Lack of digital literacy skills is a major barrier for taking advantage of opportunities through the information available on the Internet (Huerta & Sandoval-Almazán, 2007). Internet or digital skills are not equally distributed in the society (van Deursen & van Dijk, 2009, 2010b). The lack of skills to use the Internet is a major factor that contributes to second order divide (Hargittai, 2002, 2003; Huerta & Sandoval-Almazán, 2007) and even though the physical access gap is addressed and closed in developing countries the skills gap tends to grow (van Deursen & van Dijk, 2010a). Developing people's networked competence in the new digital age has been given emphasis recognizing this digital divide between the information-rich and information-poor (Savolainen, 2002).

This second level digital divide, which the students faced, can be abridged by developing students' networked competence by focusing on the skills to identify, retrieve and use the correct information from the Internet, and moreover they also learned how to network and get connected through the Internet.

Even though the Internet may offer information on almost every topic, it is easy to get lost in the enormous links and resources (Hargittai, 2006). Using the Internet can be difficult for novice users as an Internet search can give an inconceivable volume of information, which is unstructured, making it look chaotic (Edwards & Bruce, 2002; Lazonder, 2000). Learning how to use the Internet is not an easy task because of the diverse paths of navigation and usage options (Iske, Klein, Kutscher, & Otto, 2008). What makes it more challenging is that the problems that are applicable to an information system, like disorientation, navigation, inefficiency and cognitive overload, are multiplied on the Internet (Uden, Tearne, & Alderson, 2001). Surfing from one hyperlink to another will not bring optimal results, and specific navigation and browsing skills is required to find the most relevant information (Savolainen, 2002). All this can make learning to use the Internet a frustrating experience for novice users. Thus for the students, who are novice users, searching the Internet and getting adequate and relevant information is a complex process which requires

a great amount of specialized searching skills.

Just as an essential requirement of a lifelong learner is the ability to access, evaluate and use information, how to retrieve and use information from the Internet is necessary for the learners of this generation (Edwards & Bruce, 2002). Studies on information literacy are countless, and there are various terms which are used interchangeably such as computer literacy, networked literacy, Internet literacy, digital literacy, media literacy and library literacy (Bawden, 2001). There are different operational definitions on digital and online skills. Based on a literature review, I find the following two definitions most useful to describe how the participating students will be empowered through gaining skills and competence to use the Internet.

Firstly, McClure (1994) defines network literacy as the ability to identify, access, and use electronic information from the network. Secondly, Savolainen (2002) defines networked competence as "an appropriate way to combine the knowledge of what to do and how to do," which means it has two dimensions, knowledge and skills.

The requirements for networked competence as defined by Savolainen (2002) are,

- Knowledge of information sources available on the Internet and how they are organized
- Skillful use of the ICT tools such as Web search engines to access information
- Judgment of the relevance of information
- Use of computer-mediated communication tools

In the research, networked competence means to have the skills to identify, retrieve and use the correct information from the Internet. Students were also introduced to how to network and communicate as these are important skills in this digital age. Focus was given to the reflective and conceptual capabilities on how to use information content available on the Internet. Because it is not the technical skills that make an effective Internet user, but rather it is the reflective and conceptual skills (Edwards & Bruce, 2002; Savolainen, 2002).

Thus empowerment for the students are measured through these indicators of network competence, Internet self-efficacy, technophobia and motivation to use the Internet in the future, which can be viewed as outcomes of empowerment. The next section will describe how empowerment is measured through these outcomes of empowerment.

2.6 Measuring Empowerment

The term empowerment is widely used in development projects across the world. However, there is no accepted method for measuring and tracking changes. How to gauge the concept in order to measure related processes and outcomes is often a difficult task. As mentioned earlier in the chapter, the process of empowerment is conceptualized as how students construct identities as an Internet user. This process of empowerment is analyzed through the analytical components of identity proposed by Wenger (1998). In this section, I will discuss how empowerment outcomes will be measured in this research.

2.7 Analytical Framework for Measuring Empowerment

In my quest for finding a framework I could use for measuring empowerment, I came across the Measuring Empowerment (ME) Framework developed by Alsop & Heinsohn (2005). The framework captivated me because it was able to answer the questions that I had in mind about measuring empowerment as the framework provides practical entry points for promoting and tracking empowerment. The ME Framework is particularly useful because it allows for the measuring of empowered outcomes and also gives the scope for taking into account the institutional factors as well as the informal socio-cultural factors that influence the student's empowerment. Although the framework has been interpreted and applied to projects in different countries on a bigger scale, it also lends itself to be applied to smaller project settings and gives the flexibility to choose variables depending on the project's context.

The ME Framework provides an analytic structure to conduct in-depth research, and can be used to monitor change and evaluate the impact of a specific project that has empowerment as one of its goals (Alsop & Heinsohn, 2005). According to this framework, "Empowerment is defined as a person's capacity to make effective choices; that is, as the capacity to transform choices into desired actions and outcomes" (Alsop & Heinsohn, 2005, p. 4). This capacity to make choices is influenced by two factors – agency and opportunity structures. According to the framework, interventions aimed at improving the agency and enhancing the opportunity structure can increase people's capacity to make effective choices, which will bring developmental outcomes. Agency and opportunity structures work together and influence the degrees of empowerment a person experiences.

Figure 2.6 shows how agency and opportunity structures interact to influence the degree of empowerment which leads developmental outcomes (Alsop & Heinsohn, 2005).

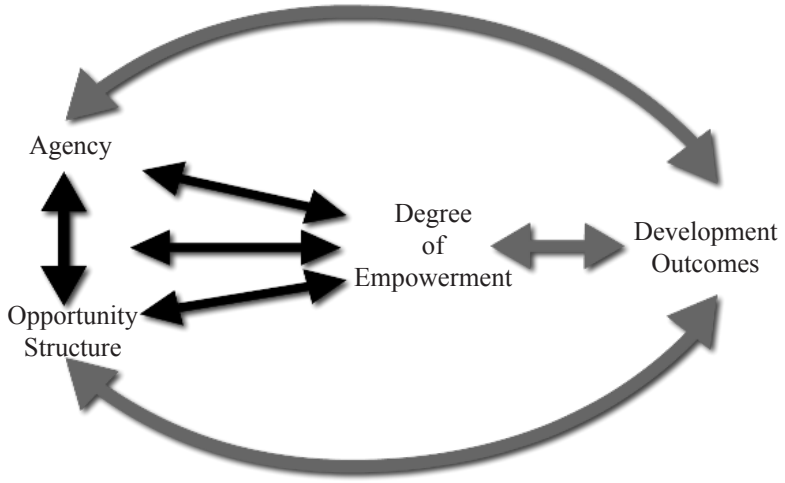

Figure 2.6. *Relation between outcomes and correlates of empowerment (Alsop & Heinsohn, 2005)*

2.7.1 Agency

"Agency is defined as an actor's ability to make meaningful choices; that is, the actor is able to envisage options and make a choice" (Alsop & Heinsohn, 2005, p. 6). To measure agency, asset endowments are used as indicators of agency. "These asset endowments can be psychological, informational, organizational, material, social, financial, or human" (Alsop & Heinsohn, 2005, p. 8). Understanding the interaction among assets is important and sometimes more than one asset contributes to capacity to make meaningful choices (Alsop, 2006). The framework does not provide standard indicators of measuring empowerment and gives the flexibility to frame indicators that are relevant to the context. Thus, the framework suggests identifying the core elements of measuring empowerment depending on what the research demands. Based on this framework the empowerment indicators developed for the research signify human, social and psychological asset endowments. Networked competence as an empowerment indicator is both a human as well as a social asset. Since the students acquire knowledge and skills to use the Internet, which is a life long skill, it is a human asset endowment. It is also a social asset as the students

also become capable to communicate and network in the digital world which is an important social capital in this information age. Improved Internet self-efficacy, reduced technophobia and improved motivation to use the Internet denote the psychological asset endowments.

2.7.2 Opportunity Structure

"Opportunity structure is defined as the formal and informal context within which the actor operates" (Alsop & Heinsohn, 2005, p. 6). The opportunity structure determines the effect of agency, which is the actor's ability to make meaningful choices. Formal institutions include the sets of rules, laws, and regulatory frameworks, and informal institutions include the informal cultural practices, value systems, and norms of behavior that operate in households or among social groups or communities. How a person can use the newly acquired skills, knowledge, and confidence to achieve the desired outcomes is influenced by the presence and operation of the formal and informal laws, regulations, norms, and customs as they determine whether individuals can use the assets acquired through the intervention.

2.7.3 Degree of Empowerment

As previously mentioned, the agency and opportunity structures are assumed to be the determining factors for the degree of empowerment a person experiences. Degree of empowerment is measured by assessing:

- Existence of choice – whether an opportunity to make a choice exists for the persons.
- Use of choice – whether a person takes advantage and actually uses the opportunity to choose.
- Achievement of choice – whether the choice resulted in the desired result for the person.

This aspect of the ME Framework provides the possibility of knowing whether participants have the scope to use what they learned in the intervention in the future.

The ME framework conceptualizes three different domains and three different levels of actors' lives to describe where empowerment takes place. The three domains are the state, in which a person is a civic actor; the market, in which a person is an economic actor; and society, in which a person is a social actor. The three levels that the framework considers are the local level, which comprise the immediate vicinity

of a person's everyday life; the intermediary level, which comprise a vicinity which is familiar but which is not encroached upon on an everyday basis; and the macro level, which is a vicinity that is furthest away from the individual, which is likely to be the national level (Alsop & Heinsohn, 2005)

In this research project, the focus is on how students are empowered at the social level within the local context. Because of the limited time and scope of the research, the interventions are focused on changing the agency element through the asset endowments and not the opportunity structure. How the framework is deployed to measure empowerment is discussed in detail in Chapter 7.

In this chapter, I have given an overview of the theoretical underpinnings which drives the research and the framework used for measuring empowerment. In the following chapter, I will discuss the research design, which is an outline of the research and how it is conducted described in terms of knowledge claims, methodology, research methods and strategies of enquiry or data collection tools.

CHAPTER 3

Research Design

Research design is understood as a conceptual structure within which research is conducted (Kothari, 2004). It is a logical structure for the inquiry of research problems. A research design has to be in agreement with the problem to be researched. The research design in this research is guided by the elements of the design framework advocated by Creswell(2003). The design framework for the research takes into account the philosophical assumptions about what constitutes knowledge, the research methodology adopted, the data collection approach that influences the choice of research methods and the data collection tools.

3.1 Research Paradigm

One of the first tasks of researchers is to position themselves paradigmatically(Cameron, 2011). Research paradigm can be defined as "the basic belief system or worldview that guides the investigator, ontologically, epistemologically and methodologically" (Guba & Lincoln, 1994, p. 105). Developing a research paradigm was a complicated process due to the diverse ways it is defined in the literature. Creswell (2002) defines research paradigm as a "knowledge claim" where researchers start a project with certain assumptions about how they will learn and what they will learn during their inquiry and this standpoint is taken to explain the paradigm which drives the research.

I will discuss four major paradigms which are significant so as to substantiate my argument for positing the research paradigmatically; these are Positivism, Postpositivism, Constructivism and Pragmatism. Before addressing the paradigms, it is important to address certain questions which are based on the philosophical issues that underpin the research paradigms.

- Ontology: What is the form and nature of reality and what can be known about it? (Guba & Lincoln, 1994)
- Epistemology: What is the relationship between the knower and what can be known (Guba & Lincoln, 1994), and what counts as knowledge? (Krauss, 2005)
- Methodology: How can the inquirer go about finding whatever he/she believes can be known? (Guba & Lincoln, 1994)
- Axiology: Which values guides the research? (Creswell, 2002)
- Causal Linkages: How are causes, which is figuring out why things happen, explained? In causal explanation the independent variable is the presumed cause, and the dependent variable is the potential effect (Engel & Schutt, 2005).

- Logic: How is the interpretation done? If it is deductive, where the emphasis is on arguing from general inferences or theory to hypotheses or predictions, or if it is inductive, where the emphasis is on arguing from grounded results to general inferences (Tashakkori & Teddlie, 1998).

Without going into depth, I will give a brief overview of the four major paradigms based on the philosophical underpinnings.

Positivism: Positivism has the ontological position which assumes that there is only one truth (Krauss, 2005; Sale, Lohfeld, & Brazil, 2002). Epistemologically the investigator and the investigated object are independent entities and the inquiries are value free (Guba & Lincoln, 1994). Questions and hypotheses are stated in a propositional form and are subjected to empirical test to verify them (Guba & Lincoln, 1994). Positivism uses deductive reasoning to postulate theories that can be tested (Krauss, 2005). The causal linkage is nomothetic, which means the positivist believes that variation in an independent variable will be followed by variation in the dependent variable, when all other things are equal (Engel & Schutt, 2005).

Postpositivism: Postpositivism emerged as a reaction to many of the scholars' opposition to the positivist axioms (Tashakkori & Teddlie, 1998). The knowledge that is developed through Postpositivism is based on the objective reality that exists "out there" in the world (Creswell, 2002). Reality is assumed to exist but can only be apprehended imperfectly and probabilistically (Guba & Lincoln, 1994). "Epistemologically it is based on modified dualistic/objective assumptions that it is possible to approximate reality and the modified experimental/manipulative methodology invested in critical multiplism focuses on falsification of hypotheses" (Guba & Lincoln, 1994, p. 111). Postpositivism primarily uses deductive logic, which is reduction to specific variables, hypotheses and questions (Creswell, 2002). In Postpositivism, causes will probably determine effects or outcomes (Creswell, 2002). It is also value free (Guba & Lincoln, 1994), and the values which the researcher holds are not brought into the research.

Constructivism: Criticism on the positivist paradigm resulted in the emerging popularity of more radical paradigms than Postpositivism and is known under several names such as Constructivism, Interpretivism and Naturalism (Tashakkori & Teddlie, 1998). Constructivism is the most widely used term. The ontological assumption of Constructivism is that there are multiple, apprehendable and sometimes conflicting social realities (Guba & Lincoln, 1994; Krauss, 2005). Constructivism's

hermeneutic/dialectic methodology aims at reconstructing previously held constructions (Guba & Lincoln, 1994). Constructivism is value-bound (Guba & Lincoln, 1994; Johnson & Onwuegbuzie, 2004), and knowledge created is seen as created in interaction among investigator and respondents (Guba & Lincoln, 1994). The causal effect has an idiographic perspective, where a series of concrete events, thoughts, or actions is seen as resulting in a particular event or individual outcome (Engel & Schutt, 2005). Constructivism follows an inductive logic where data is collected with the intent of developing themes or general inferences from the data (Creswell, 2002).

Pragmatism: In Pragmatism "[t]ruth is what works at the time: it is not based in a strict dualism between the mind and reality completely independent of the mind" (Creswell, 2002). In Pragmatism current truth, meaning, and knowledge is tentative and changes over time (Johnson & Onwuegbuzie, 2004). Pragmatism embraces both Positivism (including Postpositivism) as well as Constructivism and can be explained as emerging from the rejection of the forced choice between Positivism (including Postpositivism) and Constructivism (Tashakkori & Teddlie, 1998). Epistemological orientation can be both subjective as well as objective as at some points the knower and the known may be interactive and sometimes may stand apart from what one is studying (Tashakkori & Teddlie, 1998). In Pragmatism, the research on any given question falls within a cycle of inference processes, which uses both inductive as well as deductive logic. It is based on abductive reasoning that moves back and forth between induction and deduction (Morgan, 2007). Pragmatists believe that values play a significant role in conducting research and drawing conclusions; it provides a value-oriented approach to research that is derived from cultural values and specifically endorses shared values such as democracy, freedom, equality, and progress (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998). Pragmatists believe that casual relationships do exist but may not be possible to pin down (Tashakkori & Teddlie, 1998).

While the Positivist paradigm (including Postpositivist) underlies what are called quantitative methods, the constructivist paradigm underlies the qualitative methods (Tashakkori & Teddlie, 1998). Pragmatically oriented researchers refer to mixed method that draw upon both quantitative and qualitative methods. No paradigms are indisputably accurate according to Guba & Lincoln (1994).

Some authors claim that the mixed methods approach is the "third wave" or third research movement or a third methodological movement (Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2011). As the authors Teddlie & Tashakkori (2011) in the Sage

Handbook of Qualitative Research (Denzin & Lincoln, 2011) state, the paradigm debate between the quantitatively and qualitatively oriented researchers based on a set interlocking epistemological, ontological and methodological assumptions has evolved a field called Mixed Methods Research, which has also been called the "third methodological movement".

3.2 Validating Pragmatism as the Research Paradigm

I will discuss the persuasiveness and utility of the paradigm selected in this research. The approach to the research was guided by the fact that research problems should be the primary focus and not the methods that will guide the research because the questions that the research addresses are multifaceted. I would position myself fundamentally as a constructivist, and view my research from a qualitative angel, but I have embraced a pluralistic or compatibilist approach recognizing the need of quantitative data in the research and have attempted to incorporate the qualitative and quantitative approach to provide stronger evidence in order to answer my research questions.

Pragmatism is the foundation for the mixed method approach which stresses the significance of focusing on the research problem and that the research methods should follow the research questions (Creswell & Plano Clark, 2011; Creswell, 2003; Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998), which I firmly believe in as a researcher. Pragmatism is about "what works" and this was very much needed to answer the research problems in this research. The research addresses multiple issues such as the barriers to Internet usage and how students can be empowered through learning to use Internet by focusing on the issues of second order divide. The research also focuses on proposing a design based on the findings from the research. Thus, the issues addressed were multifaceted which demanded interweaving many concepts. Moreover the intervention was happening in a developing context which is usually challenging by constrained resources and socio-cultural factors and pragmatism provided the scope for choosing methods depending on the unforeseen contingencies which emerged in the field. Thus the philosophical underpinning of focusing on the research problem than the methods and the flexibility to choose what works in time very well matched the purpose of the research. Pragmatism is the philosophical underpinning for mixed method studies. Pragmatism can help in combining qualitative and quantitative approaches which offer the best possible way for answering the research questions (Johnson & Onwuegbuzie, 2004). Pragmatism allows using

multiple methods, different worldviews, and different assumptions, as well as to different forms of data collection and analysis (Creswell, 2003).

3.3 Research Methodology

Research methodology is a way to solve the research problem systematically and address steps that are generally adopted by a researcher in studying the research problem along with the logic behind them (Kothari, 2004). Kothari (2004) states that "when we talk of research methodology we are not only talking of the research methods, but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others" (p. 8). Methodology guides the choice of research methods (Somekh, 2001). This research adopts an ethnographic action research (emancipatory) methodology for knowledge creation and to bring out valid and reliable results through the research intervention. In the following section, I will explain what constitutes ethnographic action research and my rationale for choosing it as the methodology for the research.

3.3.1 What is Ethnographic Action Research?

Ethnographic action research as a research methodology has gained prominence in the early 2000s as it was developed as a methodology through an initial grant from the UK Government's Department for International Development (DFID) and support and funding from programs of UNESCO's information and communication sector in South Asia with the aim of developing a transferable methodology for the evaluation of community multimedia centers in development contexts (Tacchi, Slater, & Hearn, 2003; Tacchi, 2004). Implied from the name of the methodology, ethnographic action research is a methodology developed by combining two research approaches, ethnography and action research (Tacchi et al., 2003; Tacchi, 2004). Ethnographic action research assists in understanding the wider society, culture, social and technological structures and the communicative ecologies which the group belongs to, while also allowing a thorough understanding of one particular issue or set of issues which affect the specific community that is researched (Tacchi, 2004). The main objective of the ethnographic action research methodology is to overcome the problems of integrating an ethnographic research approach into the projects as well as to draw upon the strengths of

participatory action research (Tacchi et al., 2003; Tacchi, 2004).

In the following section, I will state the underlying reasons on why I have chosen ethnographic action research as my research methodology.

3.3.2 Rationale for Choosing Ethnographic Action Research

The main reason for selecting ethnographic action research as a research methodology was that the research addresses the issue of Internet usage from a broader developmental context with specific focus on Internet usage of users at a micro level. The research demands an understanding of the usage of ICT and the Internet, and the difficulties with accessing and using the Internet from a national perspective as well as the specific and situated socio-cultural factors that shape the technological environments at the micro level. The research approach has to take into account the diversity of the context in terms of population, the languages used and the difference in literacy levels, especially that of women users representing the specific state where the research was conducted. These understandings are very substantial as all these factors directly or indirectly influence the ICT adoption and usage. This orientation of research was well suited to the ethnographic action research methodology as the ICT context, that is, the relevance and the socio-cultural significance of ICT from a countrywide perspective, can be understood through ethnography. Since the users were women from a developing region, knowledge about the gendered role definitions that influence the use of the Internet was also required. Ethnography could guide an in-depth understanding of perceptions, values, beliefs and attitudes of women students about the Internet. Action research as a methodology can guide in designing and developing a project as a process of learning to use the Internet with the core principles of plan, do, observe and reflect. Thus ethnography was used to guide the research process and action research to link the research to the processes and actions in the research project (Tacchi et al., 2003). Since ethnographic action research is a methodology formed by combining the two research approaches, I will discuss these two approaches independently and validate how it can inform this research.

3.3.3 Ethnography

Ethnography has its roots in anthropology (Hammersley & Atkinson, 2007; Reeves, Kuper, & Hodges, 2008). The origins of the term ethnography lie in 19th century western anthropology where ethnography was a descriptive account of a community or culture,

usually one located outside the west (Atkinson & Hammersley, 1994; Hammersley & Atkinson, 2007). It has been claimed to represent a uniquely humanistic, interpretive approach as opposed to scientific and positivist positions (Atkinson & Hammersley, 1994). According to Flick, Kardoff, and Steinke (2004), "at the center of ethnographic studies is the question – theoretically put – of how the particular realities, actions and meanings are 'produced' in practical terms; they therefore look at the means employed in a given situation for the production of social phenomena from the perspective of participants" (p. 225).

Ethnography has been influenced by a range of theoretical ideas and is used in multiple disciplines. So it has no well-defined and general meaning as it has been reinterpreted and re-contextualized for specific fields and circumstances (Hammersley & Atkinson, 2007). Ethnography as defined by Atkinson and Hammersley (1994) and Hammersley & Atkinson (2007) holds relevance in the research as the authors give a well-rounded and comprehensive definition about the approach, data collection method, type of data to be collected and analysis of data in ethnography.

Atkinson and Hammersley (1994) and Hammersley and Atkinson, (2007) define that ethnography usually refers to forms of social research and has a substantial number of the following features:

- "a strong emphasis on exploring the nature of particular social phenomena, rather than setting out to test hypotheses about them
- data is collected from a range of sources but participant observation and informal conversations are the primary ones
- a tendency to work primarily with 'unstructured' data, that is, data that have not been coded at the point of data collection in terms of a closed set of analytic categories
- investigation of a small number of cases, perhaps just one case, in detail to facilitate and in-depth study
- analysis of data that involves explicit interpretation of the meanings and functions of human actions, the product of which mainly takes the form of verbal descriptions and explanations, with quantification and statistical analysis playing a subordinate role at most" (1994, p. 248; 2007, p. 3).

3.3.4 How Ethnography has informed the Research

This research also contributes to the field of HCI4D, which is a subfield of ICT4D. Ethnographic research methods are becoming increasingly influential in Human Computer Interaction (HCI) (Martin, Bowers, & Wastell, 1997; Millen, 2000) as well as in ICT4D which emphasize the role of technology in development (Bidwell et al., 2010; Githinji, 2011; Tacchi, 2004; Tacchi et al., 2003). Ethnography provides the research insights on the following aspects:

- Ethnography has traditionally been used to understand different cultures (Lecompte, 2002; Tacchi et al., 2003). "Culture provides us with intellectual tools that enable us to accomplish things that we could not do without them, as well as culture may also blind us to other ways of thinking, leading us to believe that certain things are impossible when in fact they are possible when viewed differently" (Hollan, Hutchins, & Kirsh, 2000, p. 178). Thus, ethnography was used to guide the research in having a rich understanding of the complex cultural environment which influenced the Internet usage of the students. An in-depth understanding of the gendered roles defined by the culture which influenced the students' Internet usage was very significant for this research.
- Ethnography provides the scope to investigate in particular the perspectives of participants, the nature and forms of their knowledge, and their interactions, practices and discourses (Flick et al., 2004). There is special attention given to the way the people being studied see their world (Denscombe, 2007). Ethnography facilitated the understanding of the cultural perceptions of technology, attitudes towards the Internet and how the students valued the Internet.
- Ethnography provides a rich insight into the location the participants belong to or inhabit (Reeves et al., 2008). It guided the understanding of the place and location in terms of gaining insight into the level of Internet penetration and technology acceptance on country level as well as the specific state where the students came from.
- Ethnography is a flexible research strategy that is responsive to change and provides the researchers the flexibility to adapt to unforeseen contingencies (Flick et al., 2004; Koivunen, 2010). The research demanded great flexibility as it was about understanding if the students were using the Internet and what socio-cultural factors kept the students away from using the Internet in a developing country context. The research also designed a project by giving Internet training and action research workshops with the focus on making the students learn to use the Internet with the final goal of

empowering them. Thus, the research demanded a great amount of flexibility which was provided by the ethnographic approach.

- Ethnography is a multi-method approach. Ethnography allows the use of a mixture of methods which is suitable for the research situation and the issue that is addressed (Flick et al., 2004). Ethnography allows structured data collection, and quantitative methods are frequently applied in ethnography, but what is rejected is the assumption that these are the only legitimate methods or the most important ones, so it is a rejection of Positivism (Atkinson & Hammersley, 1994). Since the research addresses a complex issue of the interplay between gender, Internet and culture in a developing country context, it demanded a mixed method approach to data collection, and ethnography as methodology facilitated the purpose.

Ethnography thus guided the research in obtaining a holistic picture of the underlying problems faced by students in using the Internet, and a complete picture of the usage and acceptance of the Internet and the problems that they face in using the Internet, which are embedded in the social, cultural and political dynamics of society that they belong to. Ethnography also helped in understanding the students' perceptions and attitudes and how they valued the Internet. In the next section, I will discuss what action research is, various approaches and how action research facilitated to produce the knowledge which the research demanded.

3.3.5 Action Research

The expression 'action research' was coined by psychologist Kurt Lewin in 1946 (Boog, 2003; Carr & Kemmis, 1986; Kemmis & McTaggart, 2005; Verma, Broers, & Schroder, 2007). Lewin's work and reputation led to action research movements in many different disciplines (Kemmis & McTaggart, 2005). Action research embraces the principles of participation, reflection, empowerment and emancipation of people and groups interested in improving their social situation or condition (Berg, 2009). In action research there can be a thematic concern rather than a more precise research question (Dick, 2007). Action research is extensively used in areas like experiential learning movement, community development, humanistic psychology, development studies, popular education, organization development and feministic thinking (Kemmis & McTaggart, 2005; Todhunter, 2001). Even though it is widely recognized and used internationally, action research does not have a widely accepted definition (Altrichter, Kemmis, McTaggart, & Zuber-Skerritt, 2002).

Some of the definitions found from the literature review, which hold relevance for this research, are as follows:

Reason and Bradbury (2001) in The Handbook of Action Research define that "action research is a participatory, democratic process concerned with developing practical knowledge in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities"(, p. 1).

Kemmis and McTaggart (2005) define action research as "learning by doing" where a group of people identify a problem, do something to resolve it, see how successful their efforts were, and, if not satisfied, try again.

Action research is also defined as a "collaborative approach to research that provides people with means to take systematic action in an effort to solve specific problems and endorses consensual, democratic and participatory strategies to encourage people to reflect on the problems " (Berg, 2009, p. 197).

Frisby, Maguire, and Reid (2009) state that "action research aims to bring together theory, method, and practice as people work collaboratively towards practical outcomes and new forms of understanding"(2009, p. 14)

The next section will give a brief overview of the various action research approaches and will discuss which approach to action research is applied in the research. Although there are many variations of action research in the literature, all forms of action research share some common features such as participation by the members involved, addressing practical problems, relationship between theory and practice and focusing on change. However, apart from these common characteristics there are some distinctive characteristics that make them unique which serve to understand better what is being examined in the study.

Table 3.1 below shows a literature review made on the types of action research approaches, which are widely used and acknowledged:

Table 3.1. *Various action research approaches*

Type of Action Research	Orientation
Participatory Action Research	Participatory action research involves participants actively participating in all phases of the action research process. Active participation by the participants from design to implementation to taking actions with the follow up or after is the underlying character of participatory action research (Whyte, 1995). It aims to reveal how a group of local people attribute meaning, interpret and understand their world, and the way the researcher negotiates, engages and facilitates the research with the participants is key to the research outcome (Genat, 2009).
Critical Action Research	"Critical action research expresses a commitment to bring together broad social analysis—the self-reflective collective self-study of practice, the way in which language is used, organization and power in a local situation, and action to improve things" (Kemmis & McTaggart, 2005, p. 273).
Action Learning	"Action learning has its origins in the work of advocate Reg Revans, who saw traditional approaches to management inquiry as unhelpful in solving the problems of organizations"(Kemmis & McTaggart, 2005, p. 274). The fundamental idea of action learning is to bring people together to learn from each other's experiences.
Feministic Action Research	Women's empowerment is a primary focus of feminist action research (Lennie, Hatcher, & Morgan, 2003). It emphasizes women's voices which are based upon their daily experiences and commitment to a political change (Prieto, 2002).

Type of Action Research	Orientation
Educational Action Research	Educational action research is described as a family of activities in curriculum development, school improvement programs and systems planning and policy development (Carr & Kemmis, 1986). What these activities have in common is the "identification of strategies of planned action which are implemented, and then systematically submitted to observation, reflection and change"(Carr & Kemmis, 1986, p. 165)
Systems Approach	"Systems approaches have their origins in organizations that use so-called 'hard systems' of engineering" (Kemmis & McTaggart, 2005, p. 275). Systems thinking approach views action as embedded in unpredictable complex systems which are in a continual process of self-creation and re-creation (Boog, 2003). The researcher assumes the role of a discussion partner or trainer in real world situations (Kemmis & McTaggart, 2005).
Emancipatory Action Research	Action research from an emancipatory perspective is "designed to improve the researched subjects' capacities to solve problems, develop skills (including professional skills), increase their chances of self-determination, and to have more influence on the functioning and decision-making processes of organizations and institutions from the context in which they act" (Boog, 2003, p. 426). Emancipatory approach requires participants as co-researchers to engage in collaborative, critical and self-critical inquiry (Bellman, 2001).
Action Science	Action science "is a form of social practice which integrates both the production and use of knowledge for promoting learning with and among individuals and systems whose work is characterized by uniqueness, uncertainty and instability" (Friedman, 2006, p. 159). "It emphasizes the study of practice in organizational settings as a source of new understandings and improved practice" (Kemmis & McTaggart, 2005, p. 274).

The use of action research as a methodology in the research is for understanding the process of learning to use the Internet and thereby empowering the student participants. The main objective of the research was to find out how could Internet usage empower women participants. The research adopts the emancipatory perspective of the action research methodology even though it is easy to assume that the research would use feministic action research since the research had empowerment as its goal and women participants.

The underlying reason for not selecting feministic action research was that the research does not focus on the "anti-oppressive" ideology emphasized upon by the feministic action research. The women students in the research are not viewed as an oppressed group because of the very fact that they are master's students, which indicates a certain degree of privilege. The intention of the research was not to emancipate the women students by changing their gendered role definitions as a result of larger social structure and patriarchal roles which influenced their everyday life and indirectly resulted in their trials and troubles in accessing the Internet.

The action research project was designed so as to serve as a reflective learning process to learn to use the Internet. The focus was on the emancipatory character of action research methodology which aims at improving the Internet usage skills so that the students could become network competent resulting in removing or reducing their fear of using the Internet and making them more confident and motivated for using the Internet in future. The next section will give a brief overview of the emancipatory character of action research.

Emancipatory character of the Action Research: Literature on the emancipatory aims of action research talks about how it can be a vehicle for empowering the participants in the context under study. Action research can take the form of empowering those with little voice (Bradbury-Huang, 2010).

The definitions for emancipatory action research that holds relevance for the research are discussed below:

Boog (2003) states that action research has always been emancipatory as it is "designed to improve the researched subjects' capacities to solve problems, develop skills (including professional skills), increase their chances of self-determination, and to have more influence on the functioning and decision-making processes of organizations and institutions from the context in which they act (p. 426)",which has been mentioned in the Table 2 above.

For Buskens and Earl (2008), emancipatory action research seeks to use knowledge processes to inform action. The authors argue that, "in an international development context, action researchers seek to improve the lives of marginalized people both through the process of inquiry as well as through the practical application of the research findings. They operate within a context of change, advancing toward social justice and ecological wellbeing" (2008, p. 173).

Thus, action research methodology has an inherent goal of participatory democracy, which can bring emancipatory and empowering results for participants. To conclude, from the research perspective, emancipatory action research is a process whereby individuals develop competencies, skills and knowledge through participation and self-reflection, which brings individual empowerment. Emancipatory action research can give participants confidence and motivate them through self-development with respect to the practice or endeavor which limits or constrains them.

3.3.6 How Action Research Informed the Research

The following principles of action research, which guide the research, makes it an appropriate methodology in this research context:

Real-World Situations and Real Problems: In action research, the research is undertaken in real-world situations (O'Brien, 2001), and the problems and issues arise as a routine part of activity in the real world (Denscombe, 2010). These real-world problems are defined by the system members (Elden, 1993). In addition, action research has a natural approach to problem solving (Dick, 2007). The research focused on a real-world problem, which was concerned with empowering women through learning to use the Internet in a developing country context.

Focus on Change: "Action research consciously seeks to study something in order to change or improve it" (Berg, 2009, p. 198). This change is regarded as a valuable enhancer of knowledge in its own right rather than something undertaken after the results of the research has been obtained, and the focus of change in action research is at the micro level (Denscombe, 2010). "Unlike conventional social science, its purpose is not primarily to understand the social arrangements, rather to bring the desired change as a path to generating knowledge and empowering the stakeholders" (Bradbury-Huang, 2010, p. 93). In action research, learning is considered as a prerequisite for change (Kalliola, 2009). In this research, the change for the participants was to occur through learning to use the Internet. The focus was not solely

on producing knowledge of what kept the women students away from using the Internet but also about how they learn to use the Internet through the intervention of training and action research workshops and how this can bring a change through empowering experiences.

Theoretical Emphasis: The action research process is motivated by theoretical standpoints (Drummond & Themessl-Huber, 2007). The researcher explores the problem systematically and ensures that intervention is informed by theoretical considerations, which makes it different from other professional practices, consulting, or daily problem solving techniques (O'Brien, 2001). Action research connects both theory and practice, which are understood as a social praxis embedded into the social context (Fricke, 2006). The research demanded a theoretical emphasis, and the intervention had to be theoretically supported, as the aim was not just solving a real-life problem that the students had, but also that the activities and knowledge produced through the research would contribute to the ICT4D community.

Reflective Cycle: Action research is reflective, critical and self-critical (Zuber-Skerritt & Fletcher, 2007). The process of action research is self-reflective which involves planning a change, acting, observing the process and consequences of the change, reflecting on these processes and consequences, re-planning, acting, observing again, reflecting again, and so on (Altrichter et al., 2002; Kemmis & McTaggart, 2005, p. 276). The action component may focus on achieving direct benefit for the participants and may be seen as an end in itself, but it is the learning that is generated from the action-reflection cycle that provides the critical data (Altrichter et al., 2002; Kemmis & McTaggart, 2005, p. 276). The reflective approach of action research helped the research to make the participants reflect on the process of Internet search and to learn from each other in the group. This learning activity, through which they discussed to what extent they were successful in their Internet search, what went wrong with the search and how they could improve their Internet skills from each other's experiences, was the main contributing factor of the methodology to the research.

User Participation: Action research is democratic and precipitates collaborative involvement of the participants in all the phases of research (Carr & Kemmis, 1986). The participant's role is active and not passive (Denscombe, 2010), and research is undertaken in a very participative way (Dick, 2007; O'Brien, 2001; Zuber-Skerritt & Fletcher, 2007). People learn more willingly, and apply what they have learned, when they do it themselves (O'Brien, 2001). Action research is based on the belief that change occurs when the capacity for change is in the hands of those who are affected and benefited by the change

(Barazangi, 2007). In the research, the whole approach to making the students learn how to use the Internet was not a one-way process but demanded the students' active participation. It involved learning by doing and reflecting on how they did the Internet searches.

Empowering/Emancipating Nature: Through action research there are specific improved action competencies of the participants in the local situation of the specific research project and also general enhanced action competencies in other comparable problematic situations in the future, sometimes even in broader contexts (Boog, 2003). The main aim of action research workshops was to improve the Internet usage skills by learning from each other in the group which will enable them to be better equipped for this information age. Action research as a methodology thus facilitated to bring empowering experiences for the students.

Emergent and Data Driven: "Unlike much other social research, it is emergent and data driven" (Dick, 2007, p. 163). The action orientation of the methodology demands for responding to emergent aspects of the research situation. Emergence in action research means that the "questions may change, the relationships may change, the purposes may change, and what is important may change" (Reason, 2006, p. 197). The researcher refines the methodological tools to suit the requirements and demands of the situation and collects, analyzes and present data on an ongoing cyclical basis (O'Brien, 2001). The research was undertaken in a developing country context that is subject to various constraints in terms of social and cultural challenges. Moreover, how the participants, who were women users in a developing country context, would respond to the research activities cannot be predicted in advance, which required an emergent approach that action research could facilitate.

Researcher as Facilitator: Unlike other disciplines, the researcher is not objective but rather openly acknowledges the bias to other participants (O'Brien, 2001). Action research allows the researchers to position themselves strategically, which can have a local impact and allow a means to bring about changes which are locally appropriate within the globalized world they inhabit (Somekh & Zeichner, 2009). The research occurred in a developing country context with women students as participants. When participants are women users in a developing country context, the role and attitudes of the researcher does have an influence on their participation in the ICT programs (Refer Chapter 5 & 8). The role of an action researcher allowed me to be a "critical friend" for the students, as argued by Cox & Robinson Pant (2008), which was very much needed because the students also

required motivation and moral support.

Cultural Sensitivity: "It is a methodology which is grounded in the values and culture of its participant-researchers and hence it is flexible to local agency" (Somekh & Zeichner, 2009, p. 6). Cultural factors are of paramount importance when doing developmental research, and action research as a methodology helped me to be sensitive to the social and cultural elements of the society of which the students were members.

Allows Mixed Methods of Data Collection: Action Research is a more holistic approach to problem-solving, rather than a single method for collecting and analyzing data, and allows for several different research tools to be used as the project is conducted (Edwards & Bruce, 2002). Thus, it does not impose constraints when it comes to the means for data collection that might be adopted by the action researcher (O'Brien, 2001). The research demanded a mixed method approach to answer the research questions, and action research provided the scope for this.

I have discussed above what the motivation and principles of the respective methodology were which guided me to select ethnographic action research as a methodology. As mentioned above, because of the complexity of the issue which the research was exploring, a mixed method approach needed to be embraced. The research methodology of ethnographic action research allowed me to use a mixed method approach to data collection.

3.4 Mixed Methods Design

I have used both qualitative and quantitative methods for data collection due to the complexity of the research problems and with the goal of providing stronger evidence for the research findings. I have already discussed what my motivation for using a mixed method approach was. The pragmatic paradigm, within which I have positioned the research, allows me to design a mixed method approach based on the notion, as argued by Creswell and Plano Clark (2011), of choosing methods that work well for addressing the research problem and questions. In this section, I will discuss the elements of mixed method design in the research. Before I describe the elements of design, I will give an overview of what a mixed method approach means. As I did a literature review on mixed method I realized that Greene, Caracelli, and Graham's work is widely acknowledged in the field. They define "mixed method approach designs as those that include at least one

quantitative method (designed to collect numbers) and one qualitative method (designed to collect words) where neither type of method is inherently linked to any particular inquiry paradigm" (Greene, Caracelli & Graham, 1989, p. 256). This definition by Greene, Caracelli, and Graham is way too simplistic, as mixed method approach is more than collecting words and numbers.

Based on a literature review of the various definitions of the mixed method approach, I found that Johnson, Onwuegbuzie, and Turner (2007) give a more comprehensive definition of mixed method approach: "Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (p. 123).

This definition has also been supported by Teddlie and Tashakkori (2011) in the Handbook of qualitative research where they argue that the definition by Johnson et.al. (2007) on the mixed method approach works well because it includes the essential characteristic of "methodological eclecticism of mixed methods approach". For Teddlie and Tashakkori (2011), methodological eclecticism goes beyond simply combining qualitative and quantitative methods; it involves selecting and integrating the most appropriate techniques from qualitative, quantitative and mixed methods in order to investigate a phenomenon of interest more thoroughly (Teddlie & Tashakkori, 2011).

3.5 Fundamental Design Principles

The research takes into consideration the key principles, stated by Creswell and Plano Clark (2011), that need to be considered to design and conduct mixed method research. Creswell and Plano Clark (2011) argue that designing the research for a mixed method approach can be more challenging than designing for quantitative and qualitative research due to the inherent complexity in mixed method designs. They state that even though designing and conducting any two mixed method studies will never be exactly alike, there are several key principles that researchers need to consider that can help to navigate this process. The principles are: using a "fixed and/or emergent design; identifying a design approach to use; matching a design to the study's problem, purpose, and questions; and being explicit about the reason for mixing methods" (Creswell & Plano Clark, 2011, p. 54).

Figure 3.1 shows the elements of a mixed method design as stated by Creswell and Plano Clark (2011), which are considered in the research.

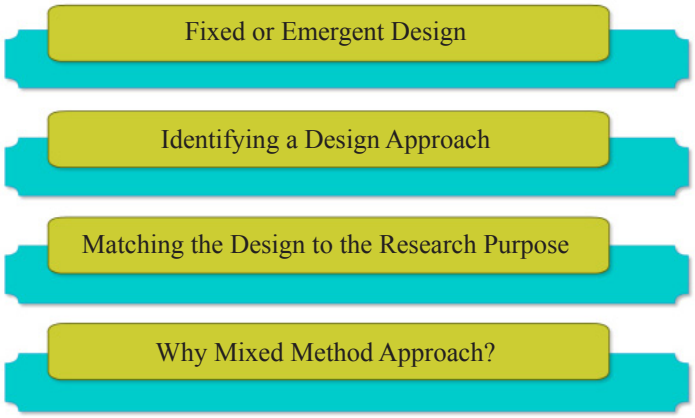

Figure 3.1. *Elements of mixed methods design*

3.5.1 Emergent Design

A mixed method study can be either fixed and/or emergent and the researcher should thoughtful on which is the best fit for his/her research. Fixed mixed method designs are mixed method studies where the use of quantitative and qualitative methods is predetermined and planned at the start of the research process, and the procedures are implemented as planned (Creswell & Plano Clark, 2011). Emergent mixed method designs are found in mixed method studies where the use of mixed method arises due to issues that develop during the process of conducting the research (Creswell & Plano Clark, 2011). The design of this research is emergent since I had to adopt certain data collection techniques which were not planned due to unforeseen situations. One of the methods that I used due to an emergent issue is the technique of participant-produced drawings. After entering the field and getting to know the students, I could observe that they were reserved and withdrawn and that they were not vocal in their expressions. The future workshop and action research workshops, where they were to express themselves and reflect in the group, were new to them. So I used participant-produced drawings in the future workshop, and in action research workshops 2 and 3. I also used sticky notes to collect some data in the action research workshops, again due to the same problem, as some students were more expressive through writing down ideas and opinions than when they were asked to speak.

3.5.2 Design Approach

An important factor in using a mixed method design is the need to apply an apt design approach that will help in addressing the problems of the study. The research takes into consideration the transformatory design approach by Creswell and Plano Clark (2011). Their transformative design approach is basically recommended for conducting research aimed at identifying the power imbalances and empowering individuals through action and change. It is based on a transformative worldview for identifying and working upon the needs of underprivileged and marginalized populations. The researcher takes a position of being sensitive to the needs of the population being studied, and the participants play an active role in the research (Creswell & Plano Clark, 2011).

Creswell and Plano Clark,(2011) state some underlying factors which determine when a transformative perspective holds relevance:

- The design is used when the researcher determines that there is a need to use mixed methods to address the transformative aims
- The researcher seeks to address issues of social justice and call for change
- The research sees the needs of underrepresented or marginalized populations
- The researcher has a good working knowledge of theoretical frameworks used to study underrepresented or marginalized populations
- The researcher can conduct the study without further marginalizing the population under study (Creswell & Plano Clark, 2011, p. 97).

Thus, the transformative design perspective is very suitable for the fundamental purpose of the research, which aims at empowering women students through Internet usage. The research was undertaken to find the barriers to Internet usage and how learning to use the Internet may empower the women students thus bringing a change, which demanded using a mixed method approach to data collection and analysis.

A transformative design approach calls for a concurrent or sequential data collection and analysis of qualitative and quantitative data (Creswell & Plano Clark, 2011). Before discussing the motivation for selecting this type of data collection and analysis, I will give a brief outline on the importance of the technique of data collection and analysis which guides a mixed method research. Tashakkori and Teddlie (1998) state that mixed method typically refers to both data

collection techniques and analyses, as the type of data collected is intertwined with the type of analysis used.

A mixed method data collection and analysis approach is categorized as typologies based on the number of methods used, timing of the data collection, type of data analysis, stages of integration etc. A typology-based design can provide a guiding framework to help inform the design choices in mixed method research (Creswell & Plano Clark, 2011). Typologies establish a common language, provide blueprints for researchers who want to employ mixed method designs and to legitimatize mixed method research by introducing designs that are clearly distinct from those in quantitative and qualitative research, and provide useful tools for pedagogical purposes (Teddlie & Tashakkori, 2011).

Typologies guide the researchers to choose a design which can provide a variety of paths which are ideal for accomplishing research goals (Teddlie & Tashakkori, 2006). Tashakkori and Teddlie (2009, 1998) and Teddlie and Tashakkori (2006) argue that a design typology in mixed method holds relevance mainly because the data analysis procedures of mixed method actually are design bound.

Teddlie and Tashakkori's (2006) work on the mixed method designs is highly interesting. I will give a brief overview of how Tashakkori and Teddlie's describe four families of mixed method designs: concurrent, sequential, conversion, and fully integrated. These are widely used and considered to be a very innovative approach to mixed method design. I will not discuss in detail all the designs, but the criteria for these design typologies are discussed below. The monomethod criteria explained by the authors are not discussed.

Table 3.2 below shows the design typologies developed by Teddlie and Tashakkori (2006):

Table 3.2. *Design typologies by Teddlie and Tashakkori (2006)*

Criterion used	*What design questions does this criterion answer?*	*What possible values for the criterion exist?*
Number of strands or phases	Will the study involve one phase or multiple phases?	Monostrand Multistrand
Type of Implementation process	Will the QUAN and QUAL data collection occur sequentially or concurrently? Will data conversion occur?	Concurrent Sequential Conversion Combination
Stage of integration of approaches	Will the study be mixed (QUAL,QUAN) in the experiential stage only, or across stages, or other combinations?	Across all stages Within experiential stage only Other combinations

I conclude that the design typology of "conversion mixed design" is the best fit for addressing the problems in this research. Conversion mixed design is a multistrand concurrent design. In this design, "mixing of qualitative and quantitative approaches occurs when the data is transformed (qualitized or quantized) and analyzed both qualitatively and quantitatively" (Tashakkori & Teddlie, 2009; Teddlie & Tashakkori, 2006, p. 23). Quantitative data collected are converted into narratives that can be analyzed qualitatively and/or QUAL data types are converted into numerical codes that can be statistically analyzed (Tashakkori & Teddlie, 2009; Teddlie & Tashakkori, 2006). Thus, both data types are analyzed/re-analyzed, and inferences are made based on both sets of analyses. The rationale for choosing this design will be discussed after a discussion of how much weightage the research gives to qualitative and quantitative components as the design typology does not consider the priority of the qualitative and quantitative components or whether both have equal importance. I would also like to address this aspect in the understanding of the design dimension of mixed method approach in this research:

Qualitative Dominant Approach: The researcher has to determine what weightage or priority is given to qualitative and quantitative components in choosing the design (Creswell & Plano Clark, 2011). There are three possible weighing options for a mixed method design according to Creswell and Plano Clark (2011):

- Equal priority – both qualitative and quantitative methods play an equally important role in addressing the problems.
- Quantitative priority – greater emphasis on quantitative methods, and qualitative methods are used in a secondary role.
- Qualitative priority – greater emphasis on qualitative methods, and quantitative methods are used in a secondary role (p. 65).

The research has used a qualitative dominant mixed method approach, where the underlying principle adopted is that quantitative data need to supplement the qualitative based research. Thus, the primary reason for selecting a design typology of "conversion mixed design" was that even though the research was mainly qualitatively driven, there were some data which had to be collected numerically and had be converted into qualitative terms in addressing the research questions.

3.5.3 Matching the Design to the Research Purpose

"The importance of the research problem and questions is a key principle of mixed methods research design" (Creswell & Plano Clark, 2011, p. 60). As discussed earlier, the overall aim of the research was to empower the women users through learning to use the Internet in a developing country context. One of the research questions was to find out what barriers the women students faced in using the Internet. For researching this, I had to use a quantitative and qualitative approach. Another question was finding out how women could be empowered through learning to use the Internet, which also required both qualitative and quantitative data. The quantitative data collected was transformed to qualitative data to obtain an inclusive picture. Thus, the problems that the research addresses required a mixed method approach because of the complexity of the issue. Since the research had empowering aims to bring change, a transformative design approach indeed suited the research purpose.

3.5.4 Why Mixed methods Approach?

Another key principle of mixed method design is to identify the reason or reasons which motivate mixing quantitative and qualitative methods within the study (Creswell & Plano Clark, 2011). The works by Caracelli and Greene (1993) and Greene et al. (1989) have described triangulation, complementarity, development, initiation, and expansion as the fundamental factors of the rationale for choosing mixed method in a study. A mixed method approach is often guided by

more than one purpose; Greene et al. (1989) and Creswell and Plano Clark (2011) urge the researchers to keep in mind that the reasons listed for mixing methods should be viewed as a general framework from which researchers can weigh alternative choices and use to justify their decisions.

Figure 3.2 below shows motivation for selecting the mixed method approach is guided by triangulation and complementarity

Figure 3.2. *Purposes of using mixed method approach*

3.5.4.1 Triangulation

"Triangulation refers to the designed use of multiple methods, with offsetting or counteracting biases, in investigations of the same phenomenon in order to strengthen the validity of inquiry results" (Greene et al., 1989, p. 256). Greene et al. (1989) elaborate that triangulation in mixed research method is based on the "logic of convergence embedded in the classic conceptualization of triangulation" (p. 26). "This logic requires that the quantitative and qualitative methods be different from one another with respect to their inherent strengths and limitations/biases and that both method types be used to assess the same phenomenon" (Greene et al., 1989, p. 266). A standardized achievement test can help in assessing the success of an educational program, and an interview or observation can help in understanding why the program was successful or unsuccessful (Greene et al., 1989).

One of my research questions was what barriers the women students in the research faced in accessing and using the Internet. A quantitative tool such as a questionnaire helped me to learn the knowledge levels in using the Internet, frequency of Internet usage, ICT (computer) skills, ownership of computers and Internet connection at home, which gave me a picture of whether they were using the Internet or not. The numerical figures helped me in learning the "what" dimension in terms

of what restricted them in using the Internet. Group interviews and brainstorming in the future workshop through sticky notes helped me to understand why they were not using Internet, and more specifically the issues of second order divide, which kept them away from using the Internet, and the gendered role defined by culture which restricted their Internet usage.

Triangulation was also employed to understand the networked competence gained through Internet usage (that is, the knowledge levels of the students). To answer the research question of how students were empowered through the research by gaining networked competence, I employed two aptitude tests, one of which was an online test and the other was a test on paper, an empowerment indicator questionnaire, and I assessed knowledge on tools introduced through the research before and after the workshops through another questionnaire, informal interviews and student reflections through sticky notes. Student-produced drawings was also used to find out how the women students were empowered through this indicator of empowerment. Thus, employing the qualitative method gave a textual representation of knowledge and helped in understanding why they were successful, and employing a quantitative approach helped in measuring the phenomenon in terms of knowledge and skills gained through the Internet, and how the students gained knowledge in numerical terms. Thus, by employing both quantitative and qualitative methods, the results obtained through textual and numerical data on the networked competence is used to converge and corroborate one another which enhances the validity of the findings.

3.5.4.2 Complementarity

Complementarity was another motivation for using mixed method in the research. Complementarity seeks "elaboration, enhancement, illustration, and clarification of the results from one method with the results from the other method" (Greene et al., 1989, p. 259). To address the research question of how the students' were empowered through the Internet through improved Internet self-efficacy, reduced technophobia and motivation to use Internet, I also collected data produced through numbers from questionnaires and textual data through students' reflections through using sticky notes and informal interviews. Moreover, another tool used was participant-produced drawings, which was employed as an artifact of the students to reflect on their experiences of using the Internet. Thus, numbers produced through the empowerment indicator questionnaire, textual data through the informal interviews and sticky notes and participant-produced drawings were employed with the intention of bringing

complementarity to the data, as the phenomenon of empowerment is complex and to substantiate how empowerment occurs is very difficult.

Thus, mixed method were used with the rationale of increasing the interpretability, meaningfulness and validity of constructs and inquiry results by capitalizing on the strength and counteracting the biases in the various methods (Greene et al., 1989). The research was driven mainly by a qualitative dominant approach; thus, methods used for data collection were mainly qualitative, and some quantitative data were also collected to obtain a comprehensive picture of the research problem. The analysis and inference is undertaken with the objective of qualitizing the quantitative data so as to narrate the quantitative data and add dimensions to the qualitative data collected.

Figure 3.3 shows the how the study was designed, and the approaches adopted in the respective stages of research:

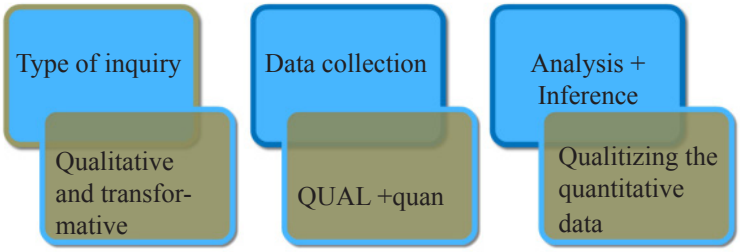

Figure 3.3. *The mixed method approach used in different stages*

Thus, a mixed method approach was used in the data collection and analysis/interpretation phases. Numbers collected as quantitative data were used to add precision to words, pictures (participant- produced drawings) and narratives, and using a conversion mixed design allowed for "meta-inference" where both inferences are combined to a coherent whole (Tashakkori & Teddlie, 2003).

3.6 Research Methods

Research is all about knowledge construction (Kothari, 2004; Oquist, 1978), and how to measure the knowledge created is often a difficult task. Researchers' understanding of knowledge and how knowledge is created influence the choice of research methods (Somekh, 2001). Research methods are defined as all those methods and techniques that are used for conducting the research (Kothari, 2004, p. 7). The research methods adopted by a researcher are strongly influenced by the context of the research, the type of people researched and to a large extent by the socio-cultural factors. The methods a researcher uses to identify and describe any element of human activity are dependent upon epistemological, cultural and political factors (Somekh, 2001). The research methods used for this inquiry can be classified as future workshop, Internet training and action research workshops.

The data collection tools were a questionnaire, informal interviews, brainstorming, group interviews, participant observation, field notes, participant-produced drawings, questionnaire on Internet tools, empowerment indicator questionnaire and an aptitude test.

Firstly, I will discuss the research methods adopted such as the future workshop, Internet training based on Bloom's Taxonomy and action research workshops, followed by a discussion on the data collection tools. Research methods in the research are seen as ways of conducting the research.

Figure 3.4 below shows how the research was conducted and the tools used to collect the data. QUAL represents qualitative data tools and QUAN represents quantitative data tools.

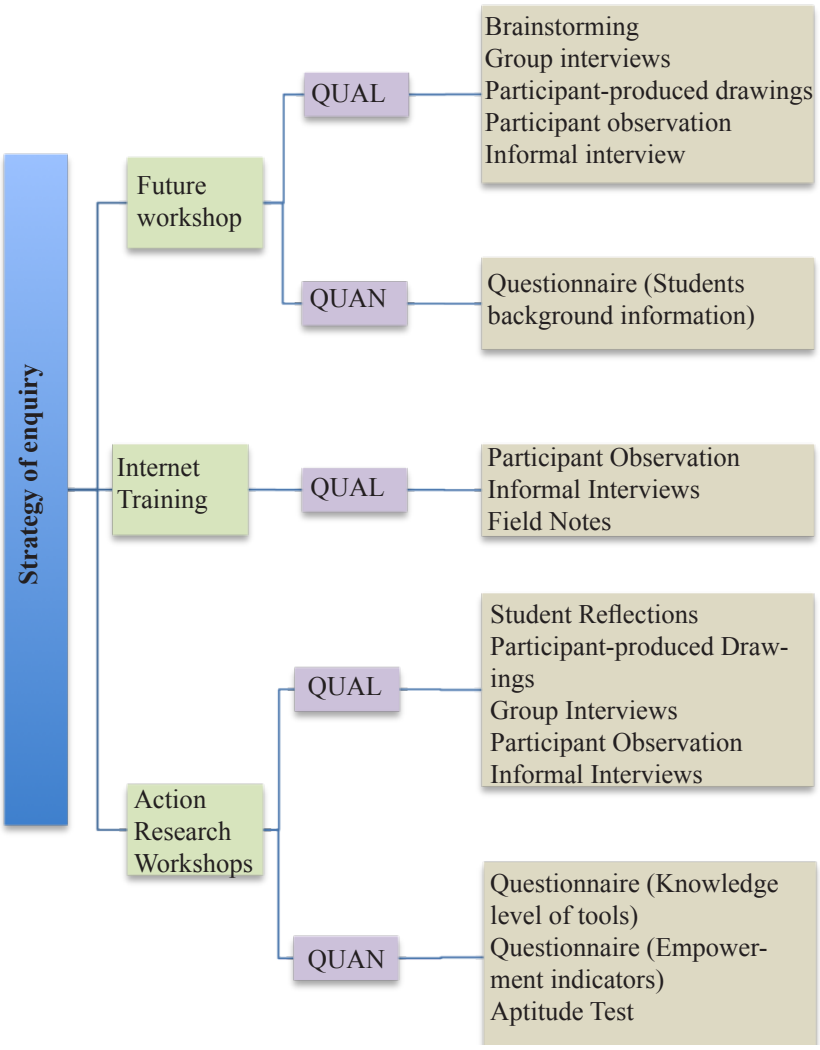

Figure 3.4. *Research methods and data collection tools used*

3.6.1 Future Workshop

Future workshop (FW) is a technique to reflect on a common problematic situation, to generate visions about the future and to discuss how these visions can be realized. Robert Jungk is considered as the father of Future Workshop (Apel, 2004; Vidal, 2005, 2006). Jungk and Müllert (1987) define a future workshop "as a kind of laboratory for social experimentation where people can try out alternative visions of the future"(p. 52). Future workshops have an emancipatory and self-controlled learning approach which makes use of knowledge of participants to feasible practices (Apel, 2004; Vidal, 2005). Vidal (2006, 2005) states that basically there are two main approaches to making changes to a real situation. The first approach is to criticize the actual situation, dream about the desired future situation and find the mode of moving from the actual to the desired one. The second approach is to fantasize about the desired situation and then evaluate the current situation and thus finding ways to change the current situation to the preferred one. He states that "The Future Workshop belongs to the first category of approaches that emphasis: critique, learning, teamwork, democracy, and empowerment" (Vidal, 2005, p. 2). Since most of the women students were not particularly verbal in their expressions, the future workshop was an apt method to bring out their concerns and thoughts as "Future workshops helps to encourage less articulate participants" (Jungk & Müllert, 1987, p. 79).

I took the role of facilitator mainly to set the scene, provide the materials, introduce the students to the workshop, encourage them and make sure that the logical phasing was followed. To bring out the best in students, I did prompt the students and was provocative as recommended by Jungk & Müllert (1987).

Jungk and Müllert in their book Future Workshop – How to Create Desirable Futures (1987) define that a typical future workshop consists of a preparatory phase and three workshop phases and concludes with a follow-up phase (Jungk & Müllert, 1987).

- ***The Preparation Phase:*** In this phase, participants are introduced to the rules and the scheduled course of activities. The rooms and facilities for the workshop have to be decided. Jungk & Müllert (1987) are of the opinion that care should be to create an informal atmosphere. Participants of the workshop should be well-informed about the purpose and principles of FW, so that they will feel easy and positive by participating in the workshop (Vidal, 2006).

- ***The Critique Phase:*** Usually, this phase is considered the beginning of the future workshop (Jungk & Müllert, 1987; Vidal, 2006). What happens in critique phase is a thorough investigation of the problem in hand. The preferred creative technique applied is brainstorming (Apel, 2004; Vidal, 2006, 2005). The participants are asked to write the critique points on small cards. Based on the results from the brainstorming, the problems are clustered or grouped accordingly. Vidal (2006) describes the first step as the convergent process and the second step as the divergent process.

- ***The Fantasy Phase:*** Here the participants try to work on a utopia to draw an exaggerated picture of the future possibilities (Vidal, 2005). Jungk and Müllert emphasize that in the fantasy phase "we must rise above our day to day troubles and be ready to - think the otherwise thinkable, be enterprising and inquisitive, be non conformist and flexible, open our minds to the irrational and "offbeat", take a chance on being wrong or failing, shun cynical know-all and perfectionist attitudes and stand up for our "cranky" ideas" (Jungk & Müllert, 1987, p. 61). According to Apel (2004), participants should be made to understand that any useful statement about the future should at first appear to be ridiculous and that no preference or desire is too crazy to be expressed and considered. A fantasizing mood can be readily developed through creative techniques such as storytelling, picture simulation, role-play metaphors, improvising sketches etc. (Jungk & Müllert, 1987; Vidal, 2005).

Apel and Vidal (2004; 2006) state that methods used in the fantasy phase for presentation of ideas should be different from rationally oriented solutions to problems. Interviews and verbal statements might not bring the best imaginative ideas. I employed student drawings as a creative tool to bring out a fantasizing mood for the students, and moreover drawing was a very apt method for some of the students who were not vocal in expressing their ideas in the group.

- ***The Implementation Phase:*** In the implementation phase, the participants discuss what may be possible and what actually can be done (Jungk & Müllert, 1987). The ideas generated from the fantasy phase are viewed with realistic eyes so as to make them implementable. Usually, an action plan is made stating who does what, where, when and how (Vidal, 2005, 2006).

- ***The Follow-up Phase:*** Jungk and Müllert (1987) state that the final phase of a future workshop should be a follow-up phase. In the follow-up phase, an elaboration of all the achieved results

are done and the action plan is monitored and necessary changes are made if needed (Apel, 2004; Vidal, 2006). In the follow-up phase, there should be an evaluation of the various processes and activities carried out in the future workshop.

3.6.2 Internet Training Based on Bloom's Digital Taxonomy

In the research, I view Internet training as a research method because the Internet training was also a way of conducting the research. The training also involved participant observations and these reflections produced data. I have used Bloom's Digital Taxonomy to design training for the students on learning to use the Internet. The underlying reason for using Bloom's Digital Taxonomy was to have a common learning goal for the students, to make the Internet learning more organized and to aid in tracking the learning outcomes.

Bloom's Digital Taxonomy, adapted by Churches (2007, 2008), focuses on the actions and learning behaviors in the new digital age. Bloom's Taxonomy was originally developed in the 1950's by Dr. Benjamin S. Bloom as a taxonomy of cognitive domains. The original taxonomy had six major categories of cognitive domains which were: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation (Karns, Burton, & Martin, 1983; Krathwohl, 2002; Ying & Yang, 2008). These cognitive domains were arranged in a cumulative hierarchical structure, increasing in complexity from the simplest level to more complex levels (Krathwohl, 2002; Madaus, Woods, & Nuttall, 1973). For Bloom, cognitive domains include educational objectives associated with the attainment and development of knowledge and intellect (Karns et al., 1983).

In 2001, Bloom's Taxonomy was revised by Anderson and Krathwohl, (2001), who retained the original number of categories, but made important changes. Three categories were renamed; the verb aspect of the original "Knowledge" category was kept as the first of the six major categories, but was renamed "Remember"; "Comprehension" was renamed "Understand"; and "Synthesis" was renamed "Create". "Application, Analysis, and Evaluation" were retained, but in their verb forms as "Apply, Analyze, and Evaluate," and Krathwohl (2002) argues that highest two levels of the taxonomy should be reversed, with "create" at the highest level and "evaluate" at the second highest level.

Churches (2007, 2008) argues that even the revised taxonomy by Anderson and Krathwohl (2001) does not address the newer objectives, processes and actions presented by the emergence and integration of

ICTs. To overcome this vacuum and address the issue, he developed a digital taxonomy. Bloom's Digital Taxonomy developed by Churches (2007, 2008) focuses on the actions and learning behaviors in the new digital age where the information literate can access, evaluate and use digital information efficiently. In the revised Digital Taxonomy, Churches adds new digital verbs to the recognized and existing verbs. The Digital Taxonomy is not about the tools and technologies; instead it focuses on how to use these tools and technologies to achieve levels of learning. This taxonomy of learning objectives was highly useful for the design and assessment of educational learning in an academic context of the present research project.

In the research, Bloom's Digital Taxonomy was used to categorize and order the thinking skills in terms of how the students learned to use the Internet. The learning domains were not used specifically to understand the learning process for the individual Internet tool or application introduced through the research. What I am interested in is how the learning domain was achieved as regards learning to use the Internet as a whole. My argument is that when a person who has not used the Internet before is given training, the order of training should start from learning basic Internet skills and move to higher skills. How the Internet training specifically was conducted will be discussed in detail in Chapter 4.

3.6.3 Action Research Workshops

"A workshop is a short-term learning experience that encourages active, experiential learning and uses a variety of learning activities to meet the needs of diverse learners" (Brooks-Harris & Stock-Ward, 1999, p. 6). The students were trained to use the Internet, and action research workshops were used as a method to reflect on the learning. Since the students had no prior knowledge of Internet usage, the project demanded a great amount of flexibility. Because action research is conducted to understand and change situations, it provided the flexibility required by its action orientation to respond to the evolving phases of the research situation. Action research has been generally acknowledged as a participatory research method. The research emphasized being participatory because without the active participation of the students, the project would not produce the desired outcome. Dick (2007) describes participation as involving the participants in doing task that they lack skills or interest in. In the particular research context, the issue was involving the students in doing Internet searches so that they would gain the skills to access, retrieve and use information from the Internet.

Action research workshops provided a platform for the students to reflect on their Internet learning as the students discussed the problems in performing various Internet activities which were introduced to them through the research, how successful they were in the search, and how they might improve the search to get correct information. The research has employed the Action Research Model for Reflective Internet Searching developed by Edwards and Bruce (2002), through which students learn how to search the Internet using the action research cycle of planning, acting, recording and reflecting.

Figure 3.5 below shows the conceptual model developed by Edwards and Bruce (2002) recognizing the need to place emphasis on the importance of a critical and reflective approach to Internet use.

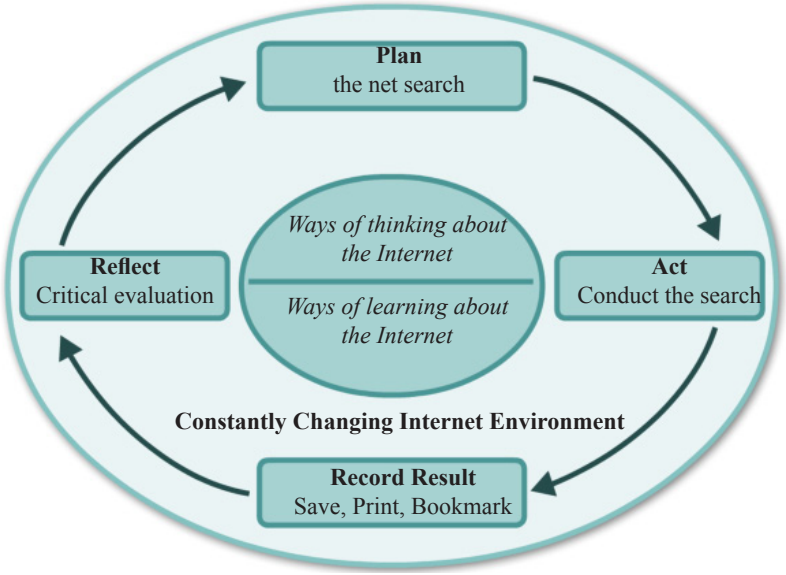

Figure 3.5. *Action research model for reflective Internet searching (Edwards* and Bruce (2002)

The model provides a conceptual framework for Internet searching to overcome the challenges of working in a constantly changing environment both in the terms of the tools and technology and the content that is available. Edwards and Bruce (2002) argue that learning to search the Internet is a perfect example of learning in a changing environment, and people find it challenging to access the Internet because it is not a static technology. Individuals are also constantly affected by the changing nature of the information tool they are choosing to use in the search, which also makes it challenging for people with regular access to the Internet. Edwards and Bruce (2002) argue that people experience Internet searching in different ways and

learn about the Internet in different ways.

The model as such does not contribute to make a person an expert in searching the Internet. However, the model does provide a framework and provides a learning path to help the user in searching the Internet. The model helps the user to improve their searching and reflective skills in using the Internet as well as to learn new techniques and tools such as information, content and technology are constantly changing in an Internet environment. Edwards and Bruce (2002) elucidate that it is the reflective and conceptual capabilities that characterize information literate rather than the aptitude of technical skills. The action research model can be very useful for individuals who are first time users and who have restricted access to the Internet. Elements of the Model are described below:

Planning the Search: The model calls for careful planning to prepare a search strategy. The students are instructed to consider the major topics of their search carefully. An analysis of the chosen topic is very important before conducting the search. Then the students may decide what keywords and corresponding synonymous to use which will give the best results. The students may decide to use a combination of words or Boolean logic to get the desired results.

Acting on the Search: As the Internet search gives innumerable results, the students need to identify whether they found the relevant information. While doing the search, students have to be able to realize whether they are distracted to irrelevant content. Since there is an abundance of information on the Internet there are high chances of being deviated from the exact information that they are looking for. If they decide that the required information is not found, they need to refine the search strategy.

Recording the Search Results: Information searched can be used in many ways. It is not always necessary that the information need to be temporarily or permanently recorded. However, most of the information searched and retrieved is to be used. Moreover, storing and recording the information is particularly useful in this research so as to reflect on the process of learning to realize what went wrong and also what search strategies could have yielded better results. Recording and storing the information depends on the nature and type of information. It can be done through printing the results, bookmarking, saving in a Word file, saving on a disk, saving the reference through a reference tool etc. Since training was done at public Internet cafés, the work was saved by taking printouts and also on USB sticks so it could be used for reflections in the action research workshops.

Reflecting on the Search: The reflection process involves evaluating the final results of the search. The students were asked to assess if the desired results have been achieved. The authority of the information has to be considered in the reflection process and whether the search results are reliable and genuine. In an action research context, when participants come together and reflect on their search strategies and the results, they can learn from each other what the best way of doing the search was, what went wrong in their search strategies, and how they could improve their Internet search.

The model thus facilitated the action research principles to plan the Internet search, reflect on the process of Internet search and the results, and learn from each other in the group. In the next session, I will discuss the data collection tools that were used in research.

3.7 Data Collection Tools

As discussed earlier, the research has applied a mixed method approach and used both quantitative and qualitative data collection tools to produce knowledge and data in text, numbers and also through audio-visual materials.

Qualitative Data: The fundamental aim of qualitative data is to provide insight to the way participants under study represent their experiences (Denzin & Lincoln, 2011). This requires an intensive exploration with the participants (Polkinghorne, 2005). Qualitative data collected are primarily in the form of words spoken or in written language and visual images, which are observed or creatively produced (Creswell & Plano Clark, 2011; Denscombe, 2007; Polkinghorne, 2005). There are various methods through which qualitative data can be collected, the main ones being interviews, observation, visual materials and personal experience (Denzin & Lincoln, 1998, 2011). Some other ways of collecting qualitative data to represent the experience of participants also studied are through stories, performances, auto ethnography, memoirs, songs, films, myth and rituals (Denzin & Lincoln, 2011). Creswell and Plano Clark (2011) state that qualitative data have also expanded to blogs, wikis and emails.

In the research, qualitative data were collected through informal interviews, group interviews, participant observation, field notes, participant-produced drawings, brainstorming through sticky notes and audio-visual materials. These are discussed in detail below.

3.7.1 Interviewing

Interview is probably the most widely employed method in qualitative research (Bryman & Teevan, 2005). A qualitative interview "attempts to understand the participants points of view, to unfold the meaning of their experiences to uncover their lived world prior to scientific explanations" (Kvale & Brinkmann, 2009, p. 1). Qualitative interviews allow the interviewer to enter into another person's perspective (Patton, 1990), and the interviewee can also be interviewed more than one time (Bryman & Teevan, 2005).

Kvale and Brinkmann (2009) suggest the following twelve aspects of a qualitative interview:

- The topic is the everyday lived world of the participants.
- It seeks to interpret the meaning of the central themes of the participants lived world.
- It aims at seeking qualitative knowledge expressed in normal language and does not aim at quantification.
- It is descriptive encouraging the participants to describe what they experience and how they feel.
- It allows specificity, where descriptions of specific situations are elicited and not general opinions.
- In a qualitative interview, the interviewer brings openness to new and unexpected phenomena rather than having ready-made categories and schemes of interpretation.
- It focuses on particular themes, and it is neither strictly structured with standard questions nor entirely non-directive.
- It can produce ambiguous answers that imply several possibilities for interpretation and sometimes produce contradictory statements.
- In the course of the interview, a participant's descriptions and attitudes towards a theme can change.
- Different interviewers can produce different statements on the same themes, depending on their sensitivity and knowledge of the interview topic.
- A research interview is seen as interchange of views between two persons where knowledge is constructed; the researcher and the interviewed are reciprocally influenced.
- A research interview can bring positive enriching experience to the participants by bringing new insights into their lives (2009, p. 28).

Interviews can be done in different forms and have a multiplicity of uses (Fontana & Frey, 1994; Kvale & Brinkmann, 2009). Scholars have suggested various classifications of interviews. Bryman and

Teevan (2005) differentiate between structured, semi-structured and unstructured interviews. Patton (1990) classifies interviews as informal conversational interviews, general interviewing guide approaches and standardized open-ended interviews. For Kvale and Brinkmann (2009) interviewing takes the form of computer assisted interviews, focus group interviews, factual interviews, conceptual interviews, narrative interviews, discursive interviews and confrontational interviews. Fontana and Frey (1994, 1998) categorize interviews as structured, unstructured and group interviews. Marshall and Rossman (2006) differentiate between generic in-depth interviewing, ethnographic interviewing, phenomenological interviewing, elite interviewing, focus group interviewing, and interviewing children, while Denscombe (2007) classifies interviews as structured, semi-structured, unstructured, and one-to-one and group interviews.

Two types of interviews were used in the research with the intention of bringing out the students feelings, experiences and opinions.

Informal Interviews: Informal conversations or interviews is one of the principal mode of data collection used in ethnography (Hammersley & Atkinson, 2007). Informal or conversational interviews allow the researcher to discuss, probe emerging issues or ask questions about unusual events in a naturalistic manner.

The main reason for using this technique was that, in an informal conversational interview, the participants may not even realize that they are interviewed (Patton, 1990), and this element helped me in eliciting highly candid accounts from the women students who were by nature shy and withdrawn. As an informal interview technique is casual in nature (Reeves et al., 2008), this technique was very helpful for ensuring that the students did not feel intimidated and making them more comfortable, thus allowing them to open up. Informal interviews provide the flexibility to move on without pre-determined questions and also provide the scope for being responsive to individual differences (Patton, 1990). This element of the informal interview was advantageous as it allowed me to individualize the questions, taking into account the fact that some of the student participants in the research were not particularly vocal and therefore needed some questions formulated differently. In these informal interviews, questions were asked with the aim of finding the barriers of using the Internet, understanding how they learned, their attitudes in using the Internet and the process of empowerment for the students.

Group Interviews: Another method of interviewing used for data collection was semi-structured group interviews. "Group Interview is essentially a qualitative data gathering technique that relies upon the systematic questioning of several individuals in a formal or informal setting"(Fontana & Prokos, 2007, p. 29). In group interviews, the researcher has the advantage of getting a wider variety of data in terms of experiences and opinions instead of each question merely prompting a response from just one interviewee (Denscombe, 2007). Group interviews can take different forms depending on their purpose. They can be brainstorming interviews with little or no structure or direction from the interviewer, or they can be very structured as seen in Delphi and marketing focus groups (Fontana & Prokos, 2007).

As previously stated, the research employed a mixed method design, and triangulation was the primary aim of using group interviews so as to enhance the validity. Group interviewing helps in getting another perspective of the research problem which would not be available through individual interviews (Fontana & Frey, 1994, 1998). Group interviews were mainly driven by two aims: firstly to make the participants at ease with speaking up; due to cultural factors the women students might limit themselves when individually interviewed, but when they realize that the other students talk about the same topic, it may motivate them to speak out and express more thoughts. Group interviews were also used to support mutual learning among the participants.

Group interviewing was used as a data collection tool in the future workshop as well as in the action research workshops. The technique used for group interview in the future workshop was brainstorming through written statements on sticky notes, and in the action research workshops group interviews were organized in a thematic semi-structured format, where open-ended questions were thrown to the participants to reflect on. The knowledge generated through group interviews mainly concerned the barriers for using the Internet, the process of learning to use the Internet in action research workshops and reflecting on the element of gender of the trainer.

3.7.2 Participant Observation

Participant observation is an integral data collection method in ethnography (Angrosino & Rosenberg, 2011; Tacchi et al., 2003). Atkinson and Hammersley (1994) state that participant observation cannot be called a particular research technique but a mode of being in the world characteristic of researchers; because all social research is a form of participant observation as we cannot study the social world

without being part of it. The observations "typically take place at the natural loci of activity where the research is taking place" (Angrosino & Rosenberg, 2011, p. 467) and being immersed in the particular research setting allows the researcher to hear, see, and begin to experience reality as the participants do (Marshall & Rossman, 2006; Tacchi et al., 2003).

In the research, observation was done while conducting the future workshop, Internet training and action research workshops. Participant observation included both formal and informal events in the research (Tacchi et al., 2003). I also made observations during the tea sessions on all days of the Internet training to get to know the students informally and to have casual conversations so as to get more information on their personal and student life mainly with the intention of socializing. This helped me build a rapport and gain the students' trust and guided me to learn more of their personal problems, what Paterson, Bottorff, and Hewat (2003) describe as getting access to "back-stage realities" through participant observation. My role as a researcher was to be engaged with their environment and to learn from the students, and I took a subjective stand in the observations rather than being an objective observer.

3.7.3 Field Notes

Field notes are termed the backbone of the ethnographic action research (Tacchi et al., 2003). They constitute the ethnographic record of ethnographic or participant observation (Shaffir, 2004). Field notes are not scribbles (Marshall & Rossman, 2006), they are a chronological log of experiences in the field, which include descriptions of people, events, the setting, conversations with people, observed interactions, and sequences and duration of events, as well as the researcher's experiences connected to the investigation (Shaffir, 2004).

Field notes were written every day detailing what happened during the training and workshops. I kept a log of the daily activities when giving Internet training comprising information concerning who participated in each training session, what was taught, attitudes of students, and practical problems such as Internet connection speed and power failures. Notes were also written on some of the casual conversations that I sensed would be important for the research. Notes were also written during the future workshop and action research workshops. This again included who participated, the activities, attitudes of students, duration of the workshops and physical descriptions in terms of infrastructural barriers. Thus, the field notes provided the basic raw material of the research (Tacchi et al., 2003).

3.7.4 Participant-Produced Drawings

Collecting data through participant-produced drawings was not planned in advanced but emerged out of requirement when I started my field studies. Data collection methods are usually decided in advance, but new methods can be introduced without prior planning if the situation demands (Tacchi et al., 2003).

Somekh (2001) argues that the cognitive processes of any individual mind are hidden, private and personally unique, and it is challenging to choose the methods concerning research that involves knowledge construction. The participants have to communicate to the researcher, how the knowledge is developed, the process of coming-to-know through language, either written or spoken, through visual representations, or demonstrate it through actions or by completion of tasks (Somekh, 2001). The primary reason for using participant-produced drawings was based on my observations that some of the students were shy, reserved and not vocal in the discussions. They had monosyllabic answers when I asked them to share their experiences in detail. Thus with the aim of making the students describe the knowledge developed as well as describing their experiences, I used drawing as a data collection method in the future workshop, and action research workshop 3 and 4.

My arguments for choosing drawing as a data collection method are as follows:

- Most of the students were shy and not confident enough in expressing their ideas verbally in spite of the fact that the discussions were in the local language. Drawings provided the scope for those students in the research who were not verbally expressive to relate to other students (Schratz & Walker, 1995a), and it provided an alternative medium for students who lacked confidence to express themselves (Bishop, 2006).
- The cognitive process the participants use when they are asked to draw is different from when they are asked to verbalize or write about their change experience (Kearney & Hyle, 2004). Since the change was in the form of empowerment, which is a difficult term to interpret, drawing was an excellent way to help me learn their experience and feelings with a different thought process.
- The open-ended nature of drawing provide the participants with wide range of possibilities (Bishop, 2006), which give them scope to frame their own experiences free from the researcher's biases (Kearney & Hyle, 2004).
- Drawings help to get the participants most salient idea or perception, discouraging the use of common and predictable

phrases and half-truths (Nossiter & Biberman, 1990) and provide a structured process through which the students could describe their experiences (Yuen, 2004).

- Speaking through an intermediary artifact such as a drawing, can make participants express difficult memories and powerful emotions (Prosser, 2011).

The students hesitated when they were asked to draw because most of them felt they were not good at drawing. I convinced them it was not the perfection of the art that I was looking at, but the expressions and ideas generated through the drawings. In order to make them comfortable, I divided them into groups. I had observed that when they were divided into groups, they were talking and expressing themselves more freely, and it also provided an informal environment making the students comfortable.

3.7.5 Brainstorming

Brainstorming is a technique most often used to generate new ideas (Frey & Fontana, 1991). The basis for brainstorming is that creativity is enhanced by participation in groups (McGlynn, 2009). Brainstorming was done using sticky notes in the future workshop and action research workshops as well as used as a base for conducting group interviews. The research followed the four ground rules laid by the inventor of the brainstorming method, Alex Osborne, so as to minimize the apprehensions and to involve the students more, which are: no criticizing, free play of ideas, having as many ideas as possible and combining and improving the ideas suggested by the participants (Jungk & Müllert, 1987; McGlynn, 2009; Sutton & Hargadon, 1996).

McGlynn (2009) states that there is a risk that creativity is reduced because group members are apprehensive about how their ideas will be evaluated by others. Post-it notes (Sticky notes) can solve this problem because it provides anonymity and also makes all the participants involved in the process (Straker, 1997). The students were asked to write down their ideas on sticky notes and to place them on flip charts, and then the ideas were discussed.

Brainstorming was used mainly in the future workshop to find out from the students themselves what problems they faced in using the Internet and what the possible solutions to improve their Internet usage could be. It was also used as a data collection technique in the action research workshops to do group interviews, primarily as a reflective process for learning and finding out what the best ways are to do an Internet search and the possible ways of improving the

Internet search. Brainstorming facilitates mutual stimulation of ideas (Brown & Paulus, 2002), and this was advantageous for students who were somewhat withdrawn and reluctant in verbalizing their thoughts.

3.7.6 Audio-visual Materials

Data was also collected in the form of audio recording, video recording and photographs.

Audio - Qualitative interviews are commonly audio taped (Bryman & Teevan, 2005; Kvale, 2007; Polkinghorne, 2005). The group interviews and informal interviews were audio taped, and they produced audio materials for future reference. Since I was mainly employing informal interviewing and a semi-structured format for group interviewing, using a tape recorder helped me to follow up the interview responses in their own words, which was required for detailed analysis (Bryman & Teevan, 2005).

Video - The purpose of video taping was for using the video for future reference. Video recording helps to document the research process for future reference and in validating the interpretation of participant observations (Paterson et al., 2003). In the research there was no intention to understand the physical mannerisms, or non-verbal behaviors of the students or to create video diaries. The future workshop and the three action research workshops were videotaped. Videotaping was done with the help of an assistant, and did not require me to be positioned behind the camera, which allowed me to interact with the students also during the videotaping. The video was not positioned at one place and was mainly used to get an overall view of documenting how the research was conducted.

Photographs - Photographs were taken during the research with the goal of documenting the research process. Buchanan (2001) terms this photo documentation, where photos are merely used as a photographic record of the research process. But there was no intention to generate data from the photos, or to use photos or camera by the participants as a data collection tool (Petersen & Ostergaard, 2003). There was no aim to understand the meanings of the mannerisms of the students from the photographs taken during the research. However, all the drawings produced by the students were photographed so as to use it later for the interpretations.

Quantitative Data: Quantitative data are represented in the form of numbers (Chua & Mark, 2005; Denscombe, 2007). Most common methods, which derive quantitative data, are questionnaires and

surveys. However, observations and semi-structured interviews with predetermined response categories can also produce quantitative data (Creswell, 2002, 2008). Similarly, a content analysis with text (such as interview transcripts) can also produce numerical data (Denscombe, 2007). Thus, when collecting quantitative data, it is not the method that is crucial but the nature of the data the methods produce (Denscombe, 2007). Quantitative data can be collected to measure individual performance and to measure the attitudes of the participants (Creswell, 2002, 2008). The inference of quantitative data is made using deductive logic (Onwuegbuzie & Johnson, 2006).

In the research, questionnaires and an aptitude test were the main data collection methods used which resulted in quantitative data.

3.7.7 Questionnaires

The first major data collection method used in the research was a questionnaire. A questionnaire is a "self report data collection instrument that each research participant fills as part of the research study" (Johnson & Christensen, 2010, p. 162). Patton (1990) compares a questionnaire with a photograph and states that just as a photograph, which captures and freezes a moment in time, in the same way a questionnaire record a respondents answer to a question at the moment in time. Researchers use questionnaire to collect data on thoughts, feelings, attitudes, beliefs, values, perceptions, personality and behavioral intentions of the participants (Johnson & Christensen, 2010). Thus, in designing a questionnaire, questions can be asked and data recorded in many ways, which are appropriate for different purposes, and allows different types of data that can be used and analyzed differently (Brace, 2008; Johnson & Christensen, 2010). Questionnaires were mainly used in the research to obtain standardized quantified data.

Closed-end Questionnaire: A closed-end questionnaire comprises a frame of possible responses or predetermined categories from which the participant has to choose (Brace, 2008; Johnson & Christensen, 2010). Two types of closed-end questionnaires were used in this research:

1. For comparing the knowledge level of the Internet applications introduced to the research before and after the workshops a closed-end questionnaire was used at the end of the intervention in 2010.
2. A questionnaire on the indicators of empowerment, through using the Internet, was used in 2012 as a follow-up which produced interval data (Denscombe, 2007) that helped me to compare the

difference over a period.

Mixed Questionnaire: A mixed questionnaire was also used, which is defined as a self-report instrument filled out by the respondents with both closed and open-end items (Johnson & Christensen, 2010; Johnson & Turner, 2003). Two types of mixed questionnaires were used:

1. For collecting background information of the students, a mixed questionnaire was used at the beginning of the research to collect information concerning ownership of PC/laptop, computer skills, Internet usage, place of access, how they get connected, reasons for accessing the Internet, ownership of mail and social networking accounts, time spent on the Internet etc. The questionnaire had an "Others" column in certain categories where the probable answers given for the items may be incomplete or inappropriate (Johnson & Turner, 2003).
2. For collecting data on the indicators of empowerment framed for the research, an open-end item as a "Comments" category was used, which gave scope for the students to give answers in their own words if the options provided in the predetermined categories did not match their expected answers. This questionnaire was used at the end of the intervention in 2010.

3.7.8 Aptitude Test

Aptitude tests can help in finding out the individual performance of the participants (Creswell, 2008; Greene et al., 1989). Quantitative aptitude tests were used in the research to learn how the students' performances improved in using the Internet. The first aptitude test was conducted during the second action research workshop as an Internet acronym quiz using Google Forms. At the end of the fourth workshop, a multiple-choice test was done with ten questions with options given, and the total score assigned was ten. The questions for the test were based on the tools, which the students learned to use in the research.

3.8 Data Analysis

Qualitative analysis is defined as the "process of resolving data into its constituent components, to reveal its characteristic elements and structure" (Dey, 1993, p. 31). In a quantitative analysis, the unit of analysis is numbers, which are particularly well suited to make measurable comparisons and correlations (Denscombe, 2007). A mixed-method data analysis involves analyzing qualitative and

quantitative data to understand the phenomenon under study (Creswell & Plano Clark, 2011). "A mixed-method data analysis is defined as the use of quantitative and qualitative analytical techniques, either concurrently or sequentially, at some stage beginning with the data collection process, from which interpretations are made in either a parallel, an integrated, or an iterative manner" (Onwuegbuzie & Teddlie, 2003, p. 252).

Since the research uses a mixed methodology, the process of data analysis was predominantly guided by the mixed-methods data analysis model developed by Onwuegbuzie and Teddlie (2003).

Figure 3.6 shows the process of data analysis adopted in the research.

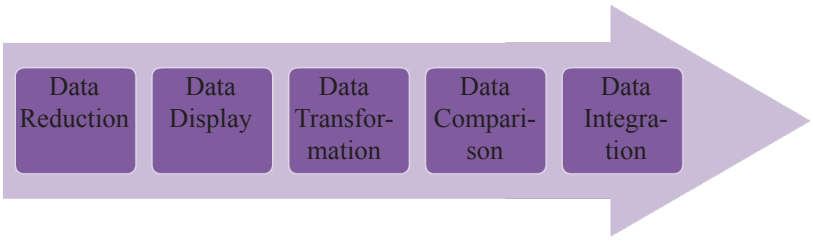

Figure 3.6. *Data analysis steps followed in the research*

The model proposed by Onwuegbuzie and Teddlie (2003) has seven stages. However, the authors state that the steps to be followed in the model are dependent on the purpose of adopting a mixed method approach and the steps need not be followed in a linear way. Here, data analysis was guided by five of the seven stages proposed in the model. There was no data correlation of the quantitative data with the qualitative data, and the analysis was also not guided by data consolidation where by new data sets were formed.

3.8.1 Data Reduction

The first step of the analysis was data reduction. "Reduction not only allows analysis, it is analysis, in that clusters and partitions will necessarily follow the analyst's evolving sense of how the data come together and how they address the research questions she/he wishes to answer" (Huberman & Miles, 1983, p. 285).

Qualitative data: Firstly, all the data was sorted and organized. All the video and audio files were numbered and sorted according to the respective workshops. The participant-produced drawings were photographed and filed. The reflections from student brainstorming sessions on sticky notes were documented in Word files. All the field and observational notes written in diaries were documented to Word files.

Transcribing: The foremost task in preparing the qualitative data was transcribing the interviews. Transcription is the process of putting into written form the words of the participants (Flick et al., 2004). Oliver, Serovich, and Mason (2005) argue that transcription can "powerfully affect the way participants are understood, the information they share, and the conclusions drawn" (Oliver et al., 2005, p. 1). Transcripts produced were from the audio and some of the video data. Transcribing the data was predominantly based on denaturalism, where stutters, pauses, nonverbal, and involuntary vocalizations were removed (Oliver et al., 2005). However, in a few places I have a taken a naturalistic stance and included the non-verbal cues that I felt were important.

Coding and categorizing qualitative data: The type of analysis adopted in the research mainly drove the coding and categorizing of data. The qualitative data is mainly text or narrative, and the basic approach for analyzing and interpreting text and narrative data is content analysis. Qualitative content analysis is defined as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p. 1278).

Hsieh and Shannon (2005) endorse three distinctive approaches for qualitative content analysis. They are (a) conventional analysis, where the coding categories are derived directly from the text data; (b) directed approach, where the analysis starts with a theory or relevant research findings; and (c) summative content analysis, which involves counting and making comparisons, usually of keywords or content, followed by the interpretation of the underlying context. Each of these approaches takes a naturalistic paradigm and interprets meaning from the content of text data, but they differ in their approaches to coding, origins of coding, and threats to trustworthiness.

The research adopts a directed content-analysis approach. In this approach, coding is done initially with predetermined codes. These codes are formulated based on a theoretical framework or theory, which are relevant for the research question and findings. Data is

further analyzed to determine any emerging codes from the raw data and see if they represent a new category or subcategory of any exiting codes.

Priori codes: These codes can be developed before, based on their relevance to research questions (Johnson & Christensen, 2010). The codes were predetermined, as they were the result of reflections and discussion by the students in the future workshops. Therefore codes were developed based on the theoretical constructs of empowerment like confidence (self-efficacy), fear (technophobia), motivation (motivation to use the Internet in future), and knowledge gained (networked competence). These codes had guided the questions in informal and group interviews. Transcripts, student reflections, and interpretations from drawings were reviewed several times to identify these particular codes in the raw data.

Emerging Codes: Data was then analyzed again to determine new emerging categories. I went through the data repeatedly and carefully until I understood the patterns and themes that emerged from the raw data. Then I went ahead with segmenting and identifying codes that emerged. The raw data that had common attributes were coded and assigned to categories, which allowed me to organize data through a variety of different distinctions as indicated in the literature (Denscombe, 2007; Dey, 1993). This categorization was not based on predetermined codes or assumptions but was grounded in the data.

Coding of Quantitative data: The sample size of quantitative data collected was small, as the group comprised only twelve students. Coding of quantitative data involves attribution of a number to a piece of data, or group of data, so that the data can be analyzed in quantitative terms (Denscombe, 2007).

Research had produced three types of qualitative data. There was nominal data produced, collected with a questionnaire on the background of the students and an aptitude test. Nominal data comes from counting things and placing them into categories (Denscombe, 2007). Data produced from the questionnaire was counted and assigned to categories from the questionnaire. Similarly, scores from the aptitude test were counted and assigned ranks.

Ordinal data was also produced through questionnaires regarding participants' knowledge level of tools introduced before and after workshops. Ordinal data is based on counts of things assigned to specific categories, which stand in some clear, ordered, ranked relationship (Denscombe, 2007). Ordinal data produced was counted

and assigned to scales in the questionnaire.

There was some interval data, which is like ordinal data but has an interval span (Denscombe, 2007). This was collected in the form of an empowerment indicator questionnaire during two time periods in 2010 and 2012. This data was also sorted, counted, and assigned to distinctive categories of time periods.

3.8.2 Data display

Firstly, I'll explain how the quantitative data collection was displayed. This involved categorizing the data and grouping the data collected from questionnaires into tables. The demographic variables and ICT/Internet background information of the students were made into tables. Ordinal data produced through questionnaires on knowledge level of tools introduced before and after workshops was made into tables. Interval data produced from empowerment indicator questionnaire was also displayed in tables. Data display of qualitative data involved preparing reports from the interviews and tables from the student reflections from brainstorming using the sticky notes. Filed notes from the Internet training session were also produced as a report.

3.8.3 Data Conversion

Data conversion in the research was conducted through transforming the quantitative data into qualitative categories or narratives (Tashakkori & Teddlie, 1998). This process is called qualitizing the quantitative data (Tashakkori & Teddlie, 1998). Verbal descriptions of the questionnaire data on background information, empowerment indicator questionnaire, knowledge level on the tools learned before and after workshops, and data from the aptitude test were made into narrative profiles. Quantitative data collected was thus converted to narrative form so that it could be analyzed qualitatively.

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3.8.4 Data Comparison

The data comparison stage in the research involved comparing the quantitative and qualitative data. This step is used in data analysis if the purpose of mixed methods is triangulation, initiation, or complementarity (Greene et al., 1989). Data comparison of qualitized data produced from the questionnaire regarding Internet usage level and barriers of Internet usage were compared with the data from transcriptions from the group interviews and text data produced through reflection on sticky notes by the students. Comparison was

also made of qualitative and quantitative data sets produced for networked competence. Qualitized data from the empowerment indicator questionnaire and also from the questionnaire on knowledge levels before and after the workshops was compared with the text data produced through transcripts of interviews and reports of student reflection on sticky notes, as well as interpretations from the student-produced drawings. Data comparison was also made between quantitative and qualitative data sets produced of empowerment indicators like technophobia, Internet self-efficacy, and motivation.

3.8.5 Data Integration

Data integration is the last stage of analysis in which all data is integrated into a coherent whole or two separate sets as quantitative and qualitative. After comparing the data I integrated both qualitative data and qualitized quantitative data into a coherent whole to get a comprehensive picture of the research problems addressed. Qualitized data produced in the narrative descriptions of the questionnaire about Internet usage and barriers were integrated with the text data produced from the transcripts of the interviews and students' reflection through sticky notes to answer the barriers of Internet usage. Qualitized data in the form of narrative reports of the empowerment indicator questionnaire, narrative reports of the questionnaire on knowledge levels before and after the training and workshops, and aptitude test taken by the students were all integrated to answer how the students gained networked competence through the research. Data integration was also done of the qualitized quantitative data and qualitative data sets produced of indicators of empowerment of technophobia, Internet self-efficacy, and motivation to use the Internet. Data integration was also done by integrating the qualitative data as a separate whole to interpret meanings about how the students constructed identities as Internet users.

3.9 Summary

In this chapter, I have given an overview of the research paradigm, the methodology that guides the research, research methods used in conducting the research and the data collection techniques that I have used to construct data.

Since the problem that the research addresses is a complex interplay of ICT, gender and culture, and it also addresses the issue of second order divide, concerning how the women students can be empowered through making them use the available technology, it demanded a

mixed method approach to answer these multifaceted questions. The philosophical underpinning of pragmatism on what works best to answer the research question allowed to use mixed method approach, and it provided me the scope to use both qualitative and quantitative data collection tools to bring stronger evidence for the research questions. In addition, since the research context was in a developing region that is usually characterized by different constraints, a paradigm that allows me to choose methods depending on the contingencies that arise from the field was required, and Pragmatism allowed me the flexibility to choose methods depending on the emergent situations.

The ethnographic action research methodology helped in guiding the research to construct knowledge. Ethnography helped in understanding the rich and complex socio-cultural environment, which made Internet access difficult for the students. Ethnography also helped in obtaining data on the cultural perceptions and attitudes of the students towards using the Internet and how they valued the Internet. Action research helped building a project that facilitated learning to use the Internet from one another in the group. It helped in bringing a change through the intervention which the research demanded and in tracking the change that occurred through learning to use the Internet, and it also provided the flexibility to improve the project to bring effective results. Thus, as stated in the literature (Tacchi, 2004), ethnographic action research helped me to develop the project by combining rich local knowledge with action and experimentation. Moreover, both ethnography and action research supports to use mixed methods to collect data. Thus, the research methodology selected is connected to the philosophical underpinning of Pragmatism within which the research had positioned itself. Thus, this research design helped me to build knowledge, and allowed me to adopt those methods which I believed to be helpful in answering the research questions and which gave me the scope to focus on the problem rather than on the methods. Since the research has used a mixed methods approach a mixed method data analysis has been adopted which involved five stages.

In the next chapter, I will describe how the intervention in the field was conducted in the research.

CHAPTER 4

Unfolding the ICT Intervention

This chapter gives an account of the empirical studies. Since the research concerns empowering women students through learning to use the Internet, an intervention-oriented approach was required. Furthermore, the chapter hopes to provide insights into how this type of intervention can be used in other settings in the field of ICT4D.

The chapter aims to:

- Give an account of how the intervention was undertaken in a chronological order of activities conducted in the field.
- Answer the question whether an intervention design based on integrating future workshops, Internet training inspired by Bloom's Digital Taxonomy and action research workshops based on the learning domains was an effective approach for empowering women users through learning to use the Internet in a developing country context.
- Provide an overview of the challenges that appeared in the field studies.

4.1 Setting the Context

The ICT intervention was undertaken at the Department of Women's Studies, University of Calicut in Kerala, India. The group consisted of twelve master's students who were born between 1988 and 1990 who were all women. The duration of the ICT intervention was from August to November 2010. From November 2009, I was in contact with the Head of the Department, who provided me with an overview of the ICT environment at the department (Refer chapter 1). We decided that the group of students to be included in the project would be the new students who were to start their studies in June 2010 as this would make any follow-ups easier.

In the beginning, I had organized an informal session where I interacted with the students in order to get to know them and build a relationship. The same day a questionnaire was also distributed to obtain demographic data and background information of the students' Internet and computer usage.

Figure 4.1 below shows the components of the research intervention.

Figure 4.1. *Components of the research intervention*

4.2 Future Workshop

September 4th 2010
Students attended: 13

In this research, a future workshop (FW) was conducted with the aim of exploring what problems students face when using the Internet and finding possible solutions for the problems identified in cooperation with the students themselves.

As discussed in the research design chapter (3), a future workshop is a technique that provides means to reflect on a common problematic situation, to generate visions about the future and to discuss how these visions can be realized. Future workshops have an emancipatory and self-controlled learning approach which makes use of the knowledge of participants to foster feasible practices (Apel, 2004; Vidal, 2005).

Through the future workshop, students were encouraged to generate a vision about the preferred situation in terms of how they feel Internet usage could improve their lives and to consider ways of achieving those preferred situations. Encouraging students to use imaginative methods to bring out their own ideas by thinking out of the box is in line with the emancipating character of the future workshop. A typical future workshop consists of a preparatory phase and three workshop phases and concludes with a follow-up phase (Jungk & Müllert, 1987).

4.2.1 Preparation Phase

In this phase, participants are introduced to the rules and the scheduled course of activities. Vidal (2006) states that participants of the workshop should be well-informed about the purpose of the future workshop and the principles of FW, so that they will feel at ease and positive about participating in the workshop. Keeping this in mind, I first gave an introduction to the research and explained the importance of technology use to students in the western world. I also explained my expectations of the participating students and described in detail how the future workshop would be conducted and described the next phases of the future workshops. I also ensured that an informal atmosphere was created as emphasized by Jungk & Müllert (1987).

Figure 4.2 shows how the participants were seated in an open circle in the ice-breaking session meant to make the students comfortable and to encourage an informal atmosphere.

Figure 4.2 *Students seated in the "Future" workshop*

4.2.2 Critique Phase

The objective of the critique phase is to gain a critical understanding of the problems in question (Vidal, 2006). The preferred applied creative technique is brainstorming (Apel, 2004; Vidal, 2006). In critique phase, a thorough investigation of what kept the students away from using the Internet was undertaken. Students were given two reflective questions based on which they did a brainstorming. They wrote the problems on small sticky notes. Jungk & Müllert (1987) state that there should not be any lengthy statements but only key points. Therefore, they were asked to write only keywords to the following reflective questions:

- What are the barriers for empowerment through Internet usage?
- What factors restrict you from using the Internet in your educational activities?

The sticky notes were later displayed on a flip chart as shown in Figure 4.3. This idea generation stage is called the divergent phase (Vidal, 2006, 2005).

The divergent phase produces scattered ideas from everyone's brainstorm. It is important to group the ideas and find emerging themes. This is called the convergent process, and the results found are systematized in clusters accordingly to topic and each cluster is titled (Vidal, 2006).

Figure 4.3. *Critique points identified in the divergent process*

Figure 4.4. *Critique points categorized in the convergent process*

So the students' keywords about barriers for their Internet usage were categorized, and these categories were titled accordingly as shown in Figure 4. 4.

Figure 4. 5 below show the main critique points identified by the students which they felt made Internet access difficult for them.

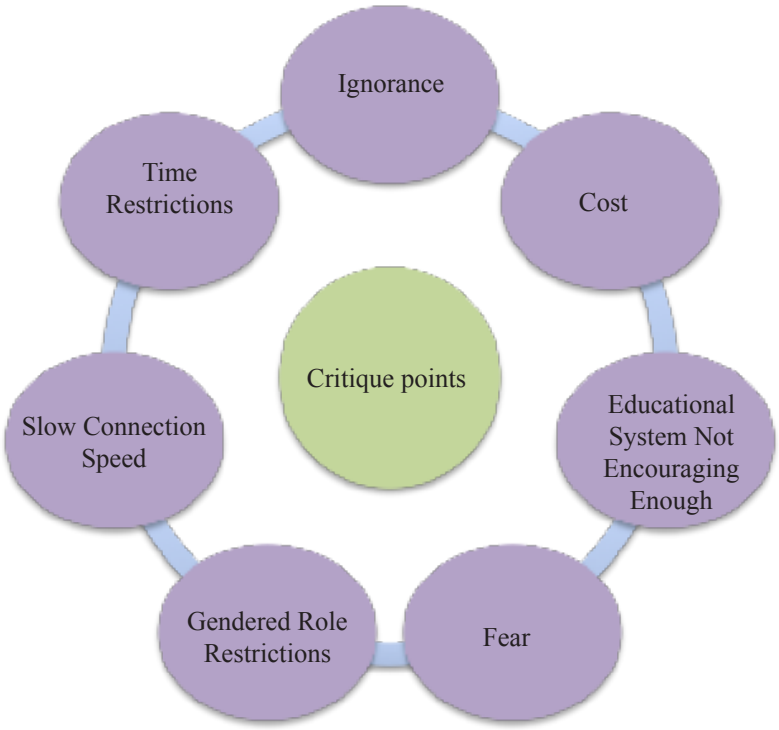

Figure 4.5. *Main critique points identified in the critique phase*

4.2.3 Fantasy Phase

In the fantasy phase the participants try to work on a utopia, that is, to draw an exaggerated picture of the future possibilities (Vidal, 2005). In this research, students were asked in the fantasy phase to consider the possibilities for the problems identified in using the Internet, irrespective of their practicality. The students worked in pairs on possibilities and were encouraged to "think the otherwise unthinkable", as stated by Jungk & Müllert (1987, p. 61). After the discussions done in pairs, the students were divided into three groups to do a pictorial representation of the exaggerated possibilities they had identified as shown in Figure 4.6.

Figure 4.6. *Students doing drawings in-group*

I observed that some of the students were reserved which made them withdrawn. They generally appeared to be shy, and since the future workshop was the first activity and they were not yet familiar with these types of activities, they were not vocal in their expressions. The technique of drawing pictures provides the scope for those participants who are not naturally talkative to relate to other students (Schratz & Walker, 1995), and it provides an alternative medium for those who lack confidence to express themselves (Bishop, 2006). Thus, it was a highly useful method to make the students fantasize without any limitation.

In this research, the students were motivated through the fantasy phase to overcome the feeling of resentment and frustration and to consider how to change things for the better. Jung and Müllert (1987) state that there should not be any restrictions, and participants should be encouraged to be enterprising and inquisitive and stand up for cranky ideas (p. 61). According to Dator (1993), participants should be made to understand that "any useful statement about the future should at first appear to be ridiculous"; that no preference or desire is too crazy to be expressed and considered (p. 4). Keeping this in mind, I encouraged the students to draw based on their fantasies without any limitations. The interpretation of these drawings will be done in Chapter 6.

Figure 4.7 shows how the first group used a computer as a metaphor in their drawing.

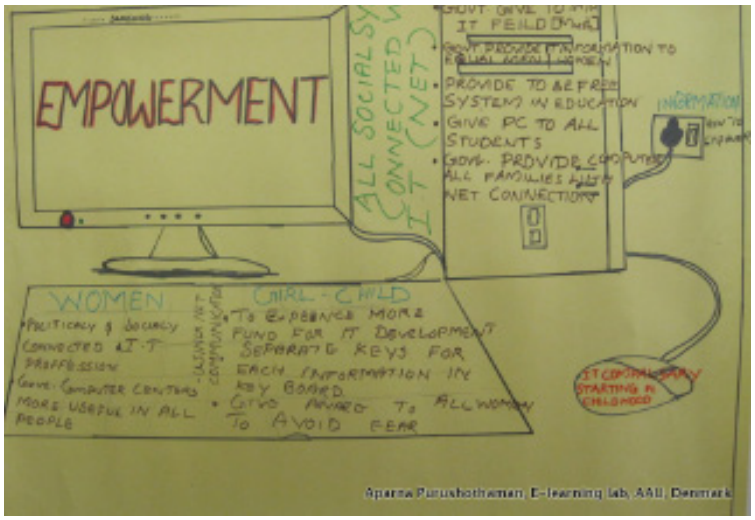

Figure 4.7. *Group one's drawing*

- The mouse was visualized as compulsory IT training starting in childhood.
- The CPU mainly represented the measures to be taken by the government to enable better Internet usage such as that the government should provide free IT information to both men and women, PCs for all students and computers with Internet connection to all families.
- They illustrated information coming from the power connection.
- The keyboard mainly represented issues for women and girl such as avoiding fear through more information, individual keys for information and more computer centers.

Figure 4.8 shows how the second group made a drawing of a tree and gave meaning to the branches, leaves and the supporting factors that make a tree grow such as the sun, soil and rainy clouds.

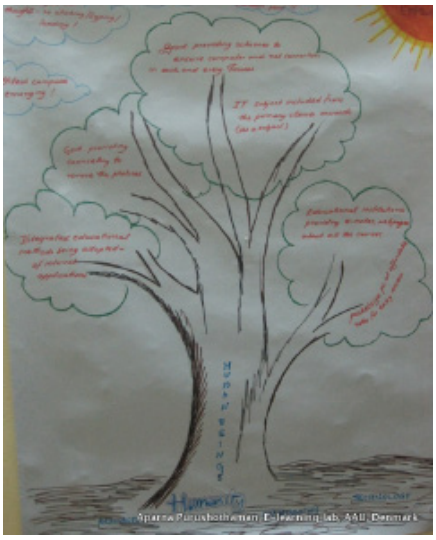

Figure 4.8. Group two's drawing

- The tree represented humanity.
- The soil in which the tree was growing represented resources, education, opportunities and technology.
- The sun was depicted as a kind of an umbrella representing "Gender Empowerment".
- The rain clouds represented technophobia being erased by some unknown power, educational institutions providing e-notes and web pages for all courses, new technologies based on our thoughts (no clicking, typing and loading necessary), the emergence of Hi-tech campuses, computer knowledge appearing in their minds one morning, pocket size PCs at affordable rates for easy access.

Figure 4.9 shows the third group's representation of drawing as a person thinking. They visualized the following possibilities through thought bubbles:

Figure 4.9. *Group three's drawing*

- Awareness among parents about Internet usage
- Primary teachers should be given special IT training
- Free computer education for all students
- Technology based class sessions
- Good security in Internet cafés
- Communication between teachers and students should be done by emailing
- Government should provide free laptops and Internet connection to all students

In the second stage of the fantasy phase, the most promising ideas out of the possible solutions or ideas the participants have generated are selected in order to transform these ideas to possible and realizable cores (Apel, 2004; Vidal, 2006, 2005). The main focus is that the ideas that are most practical should be selected. A brainstorming technique was again used to prioritize the ideas. After an evaluation based on discussions with the students, it was decided that the following ideas could be worked on:

- Reduce technophobia
- Improve Internet knowledge and usage skills through training

These were selected in terms of practicality, also considering the limited time of the research project and the fact that I would be the

only resource person available to give training to the students.

4.2.4 Implementation Phase

In the implementation phase, the ideas selected from the fantasy phase were looked at with more realistic eyes so as to make them implementable. Usually an action plan is then made stating who does what, where, when and how (Vidal, 2005, 2006).

We started by discussing what could be achieved within the limited time of the research. Before I entered the field, my aim was to give Internet training to the students after gaining an understanding of the Internet usage and knowledge level of the students. In the implementation phase, it was decided what type and level of training the students would go through in the Internet training sessions. The timing and duration of the sessions were discussed, and it was decided that it would take place in Internet cafés near the department.

I also explained to the students that after each Internet training schedule, an action research workshop would be conducted where they would have the opportunity to discuss and reflect on the Internet search activities undertaken in the each workshop so as to improve their skills and knowledge and to learn from each other. The Internet activities in the action research workshops will be based on what they have learned in the preceding training phase.

4.2.5 The Follow-up Phase

In this phase, we initially discussed how the training and the time schedules for the training could be conducted. Students gave the feedback that they need Web searching skills in order to research their seminar topics. Each of them gave feedback on various activities done in the future workshop, and they were impressed with the drawing technique used. They found it a novel idea and the technique made them feel more at ease in expressing their thoughts.

Through the future workshop, I gained an in-depth understanding of the problems which the students faced in accessing the Internet. Based on the reflections and discussions with the students it also provided the starting point to frame the indicators of what empowerment means to the students in the research context. Empowerment through learning to use the Internet was to be achieved through improved networked knowledge, reduced technophobia, improved self-efficacy, and motivation to use the Internet in future. The first two indicators came

from the student's reflections. The other indicators were framed based on my observations and reasoning which I discussed with the students that in order to achieve a sustained empowerment they also needed to develop Internet self-efficacy, which is confidence in their ability to use the Internet, and also motivation to use the Internet in future even after the project is concluded. A detailed description of these indicators is provided in chapter 2 on the theoretical framework.

4.3 Internet Training and Action Research Workshops

(September 2010 to November 2010)

Internet training was given to the students with the aim of making them capable of using the Internet. Since the students had no prior Internet knowledge, empowering them through the Internet demanded that they learn how to use the Internet. Moreover, learning to use the Internet is always learning by doing for the users. With the Internet usage experience that they gained through the training sessions, it was expected that their knowledge and skills would improve, which in turn would reduce their technophobia, improve their self-efficacy beliefs in using the Internet, and motivate them to use the Internet in the future.

For successful usage of ICT by women users, providing the infrastructure and access are not the only criteria, but also training women in the use of technology and social support that facilitates its adoption play significant roles in empowering them to maximize the use and reap the potential benefits of technology (Umrani & Ghadially, 2003;UN, 2005a;Wangmo et al., 2004). To prepare the women to make use of ICT and the Internet, basic computer training should facilitate familiarity with basic computer use, including the ability of the user to establish an email account, communicate via email, navigate the Web, understand the basic etiquette of using the Web, and how to download useful and sometimes life-saving information (Melhem et al., 2009). In this research intervention emphasis was also given to provide opportunities for the students to construct identities as an Internet user and there by develop a sense of belonging to the Internet world.

In this research study, Internet training was designed based on Bloom's Digital Taxonomy of learning domains (Churches, 2007, 2008) as explained in chapter 3 on the research design. The objective was not to make the students experts in searching and retrieving information as the content available on the Internet is dynamic and will change and become irrelevant with time; but rather the object was to provide an understanding of the process involved in getting accurate information and developing reflective and critical thinking skills

and learning by doing. These skills are life-long learning skills. The underlying reason for using Bloom's digital taxonomy was to have a common learning goal for the students, to make the Internet learning more organized and to aid in tracking the learning outcomes.

Internet tools and applications were selected based for each learning domain from the list of possible activities suggested under Bloom's digital taxonomy. Churches (2007, 2008) states that it is not necessary to require all stages for each task, action or process; and the choice is up to each individual. My rationale behind selecting the activities under each domain as recommended by the digital taxonomy is based on the complexity of the Internet activities introduced. So the students will start by learning the least complex activity and the more complex activities will be introduced as they move up the process of learning. When a student who has not used the Internet before is given training, the order of training should start from the basic Internet skills and move up to higher skills.

I would like to emphasize that the level of thinking or learning domains achieved within the specific tool were not crucial to this research. What I am interested in is how the learning domain was achieved as regards learning to use the Internet as a whole. The activities selected for learning will be discussed in the sections on the respective Internet training sessions and action research workshops. The selection of the respective Internet tools and applications were made keeping in mind that the participants were master's students and how these tools and applications might contribute to the students' academic activities and future endeavors in life.

The Internet training for the students was given in the nearby public Internet café, as the department had only two computers with Internet connection. The university did not allow the use of students' class hours, so the training was given in the morning before the normal class hours started and in the evening after the classes. Internet activities for the action research workshops were also conducted at the nearby Internet cafés.

Figure 4.10 below shows how the Internet training and action research workshops were designed in this research. INTR denotes Internet training and ARW signify action research workshop.

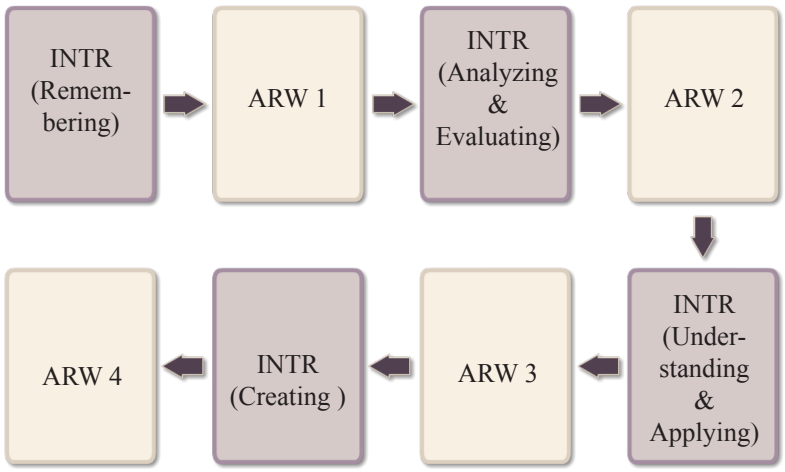

Figure 4.10. *Design of how Internet training and action research workshops were conducted*

Action research as a methodology facilitated the research; in action research, the research is undertaken in real-world situations (O'Brien, 2001). Since the intervention was undertaken in a real life context in a developing country, the methodology required the scope to be adapted to emerging situations because projects undertaken in developing regions have other socio-cultural and technical challenges (which is explained in end of this chapter). Action research is "emergent and data driven" (Dick, 2007, p. 163), and this suited the need for flexibility which the research demanded.

Moreover, according to action research, people learn best, more willingly, and apply what they have learned when they do it themselves (O'Brien, 2001). This is based on the belief that change occurs when the capacity for change is in the hands of those how are affected and benefit by the change (Barazangi, 2007). In this research, action research as a methodology was apt for reflecting on the change that occurred for the students when they started using the Internet.

Action research workshops were conducted with the aim of generating knowledge about how women users from a developing country context who have no prior Internet knowledge can be facilitated in learning to use Internet with the reflective and cyclical process of action research so as to empower them. In the action research workshops, the students shared their learning experiences in the group and also the problems they faced in getting the correct information and the difficulties in using the various tools and applications which they were introduced to through the research; in this way, they also learned from each other.

Through these action research workshops, students were motivated to gain confidence in using the Internet. The structure of the action research workshops and the specific activities will be discussed under the respective action research workshops.

I have used the action research model for reflective Internet searching developed by Edwards and Bruce (2002) in the action research workshops, through which students learned how to search the Internet using the action research cycle of planning, acting, recording and reflecting. The model provides a conceptual framework for Internet searching to overcome the challenges of working in a constantly changing environment both in the terms of the tools, technology and the content available. Edwards & Bruce (2002) argue that learning to search the Internet is a perfect example of learning in a changing environment and people find it challenging to access the Internet because it is not a static technology.

Figure 4.11 below shows the elements of Internet search that the students reflected upon in the action research workshops:

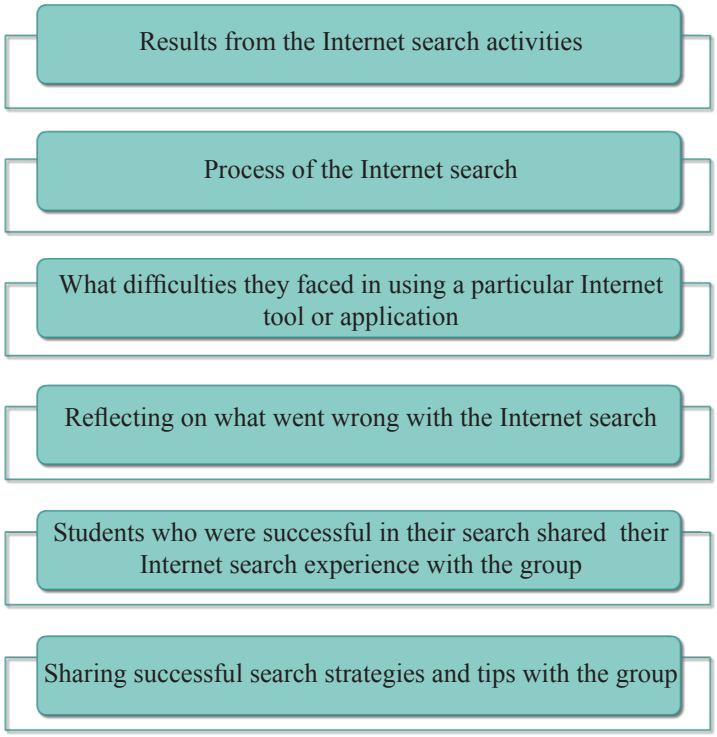

Figure 4.11. *Elements of reflection process on Internet search*

The action component of action research may focus on achieving direct benefit for the participants and may be seen as an end in itself, but is the learning that is generated from the action-reflection cycle that provides the critical data (Stringer, 1996). Thus, even though the action component in this research was that they started to use Internet, what they learn about the searching strategies and the process of the Internet search was more significant. How they learn the conceptual skills to use the Internet, how they reflect upon the search strategies and what tips they share with each other for getting the best and fastest information were the focus in the research. The students' learning reflections will be discussed in chapter 6 and 7.

Before proceeding to each Internet training session and action research workshop I will give a brief profile of the students in terms of their ownership of computers and Internet usage. This will provide an understanding of the reasons for giving the training, the specific design of the training and the rationale for choosing the specific Internet

activities for the research.

4.3.1 Student profile

The students in the research context were first semester master's students of the Department of Women's Studies at University of Calicut. There were fourteen women students in the class. Some students were day scholars who stayed with their parents and travelled daily to the University from home and some were hostelers who were staying in the University hostel. I asked for voluntary participation and one of the students declined as she knew how to use the Internet. She had a PC at home with an Internet connection and was the only student in the class with a laptop. Out of the thirteen girls, one student could not attend the training and the workshops due to sickness. Therefore, my discussions concern the twelve students who participated actively. Students are given pseudo names to keep the confidentiality.

- Anuradha did not own a computer or a laptop, and there was no Internet connection at home. She used the Internet once a month mainly through the help of friends at the university Internet center. She did not have an email account or a chat ID.
- Bindu did not have a computer or a laptop. There was no Internet connection at her home. She accessed the Internet once a month mainly with the help of friends at the university Internet center. Like Anuradha she also did not have an email account or a chat ID.
- Soumya had computer at home but no Internet connection. She did not have a laptop. She said she used the Internet two to four times a week at the university Internet center and sometimes at public cafés. She had an email account but did not have a chat ID. She said she used the trial and error method and the skills learnt in a computer course which she had attended.
- Hima did not have a computer or a laptop. There was no Internet connection at Hima's home. She accessed the Internet once a month with the help of friends, and the place of access was university Internet center. She did not have an email account or a chat ID.
- Laksmi did not have a computer or a laptop, and there was no Internet access at her home. She used the Internet once a month with the help of friends and the place of access was university Internet center. She did not have an email account or a chat ID.
- Tahira said that her frequency of Internet access was less than once a month and the place of access was Internet cafés. She did not have a computer or a laptop and there was no Internet connection at home. She stated that when she tried to use the Internet, she applied the skills that she had learned from a computer course. She

did not have an email account or a chat ID.

- Saritha did not have a computer or a laptop. She did not have an Internet connection at home. She said she accessed Internet once a month with the help of friends at the university Internet center. She did not have an email account or a chat ID.
- Deepa had a computer and she also had an Internet connection at home. She did not own a laptop. She accessed the Internet two to four times a week from home, the university Internet center and sometimes from cafés. She had an email account and also a chat ID.
- Mubeena had a computer and also an Internet connection at home. She did not own a laptop. She stated that she accessed Internet once a week and mainly from home. She used the trial and error method in searching, and she had an email account as well as a chatID.
- Reshma did not have a computer or a laptop, and there was no Internet access at her home. She used the Internet once a month with the help of friends and the place of access was the university Internet center. She did not have an email account or a chat ID.
- Vani did not have a computer or a laptop, and there was no Internet access at her home. She used the Internet once a week with the help of friends and the place of accessing the Internet was public Internet cafes. She had an email account and a chat ID.
- Jasna did not own a computer or a laptop, and there was no Internet access at her home. She used the Internet once a month with the help of friends at the university Internet center. She did not have an email account or a chat ID.

In summary, only two students had an Internet connection at home. Out of the twelve students only three were quite familiar with the Internet. Only four of the students had an email account and three had a chat ID. Most of the students said that they wanted to learn everything about the Internet as they lacked basic knowledge. Thus, I selected the learning activities while keeping in mind the level of Internet usage and the students' skills. Activities were also selected based on the restricted time of the research in giving the students Internet training.

4.3.2 Internet Training Session – Phase 1 (Remembering)

The first session of Internet training was given to the students based on Bloom's Digital Taxonomy of learning domain of "Remembering". Each domain is explained in brief under each session as to what it means in the revised model of Bloom's taxonomy (Krathwohl, 2002), and what it means in the digital taxonomy (Churches, 2008, 2009).

"Remembering" is to recall, recognize and retrieve specific information from long-term memory (Krathwohl, 2002, p. 215). Key verbs associated with "remembering" are: recognizing, listing, describing, identifying, retrieving, naming, locating and finding (Churches, 2008, 2009).The digital verbs associated with "remembering" are bullet pointing, highlighting, bookmarking, social networking, social bookmarking, favouriting/local bookmarking, searching and googling (Churches, 2008, 2009).

Figure 4.12 below shows the potential activities selected for learning based on the learning domain of "remembering" based on Bloom's digital taxonomy.

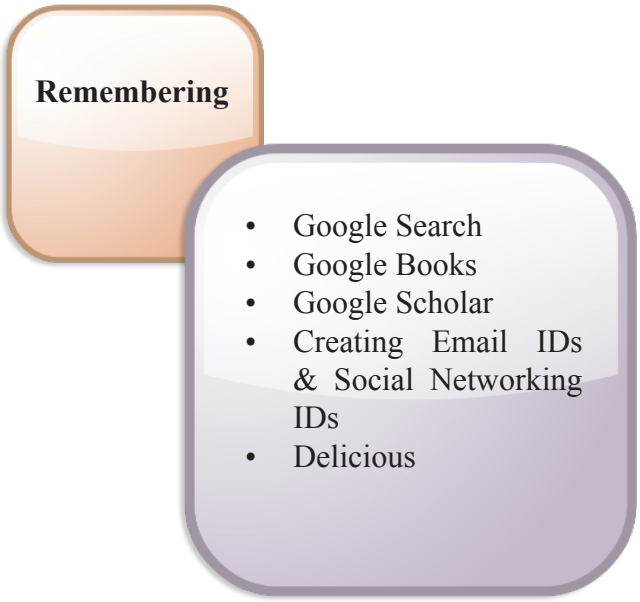

Figure 4.12. *Internet activities selected for the domain "remembering"*

The first activity introduced to the students was how to search and retrieve information from the Internet. Search engines and their uses are key elements for students' searches (Churches, 2007, 2008). Students were introduced to the Google search engine and how to retrieve materials and information from simple search strategies. Google was used because, as argued by Churches (2009), it has become the default search tool even though there are other search engines available in the Internet. I have added Google Books and Google Scholar as learning tools under this domain, but these are not mentioned in the digital taxonomy. Google Books and Google Scholar are educational tools through which students can get access to innumerable books and scholarly articles that can add value for the academic activities. My

argument is that learning to use Google Books and Google Scholar is concerned with searching and retrieving information which can be done using simple search strategies and thus getting familiarized with key verbs associated with the learning domain of "remembering" such as recognizing, identifying, locating and finding. Since Google was familiar to the students, I have used Google tools so that they could identify and relate with the Internet activities selected.

Another possible activity at the lowest level of the taxonomy recommended by Bloom's digital taxonomy is social networking. Through social networking people develop networks of friends and associates (Churches, 2009). I have also added creating email IDs because only four of the students had an email ID and having an email ID is the basic requirement for communicating and networking in a digital world. Another activity, which they learned, was bookmarking Websites. Bookmarking involved using favorites and bookmarks in Internet browsers and introducing the Web 2.0 tool Delicious. They learned to use Delicious in its simplest form – saving bookmarks an online format rather than locally on the machine (Churches, 2009).

The Internet training phase 1 was challenging for the students as many of them were using the Internet individually for the first time. For most of the students, whenever they had tried to access the Internet, it was in the company of their friends. Therefore, the students had lot of difficulties in searching the Web and mastering the techniques. The search topics were mainly from their individual seminar topics and they had to present these to the whole group as part of their studies. Anderson and Elloumi (2004) have observed that learning is more meaningful for users when they can relate to the Internet search activities and make a sense of the information which they were searching for. Thus, when students started to look for information from their topics from Women's Studies, they appeared enthusiastic and for some it was unbelievable that information could be so easily accessed.

4.3.3 Action Research Workshop 1

Students attended: 9

Action research workshop 1 was based on the Internet training given to the students concerning Bloom's Digital Taxonomy of learning domains of "Remembering". Figure 4.13 shows students doing Internet activities in the public Internet café during the first action research workshop.

Figure 4.13. Students doing activities in the AR workshop

Based on the applications introduced in the training, they were given some activities for Web searches in the workshop. Since they were master's students in Women's Studies, I expected that it would be more interesting for them to have women related topics which they might find useful as well as motivating to search for because they can relate to the topic. Moreover, I was hoping that the students might get inspired while searching for information about women leaders.

The following topics for web searches were given:

- Female population of India
- Female literates of India
- Following the Sati of which woman did the Government pass the Sati (Prevention) Act 1987?
- Short biography of Indra Nooyi
- Who is the world's most powerful woman according to Forbes Magazine?

Apart from Deepa, none of the other students managed to have the required speed in searching for information on the Internet. I could observe that the typing speed for most students was low and that many students had difficulties with controlling the mouse. The students spent more time than expected to do Internet searches. They recorded their Internet search results in the form of taking printouts.

After they had completed the Internet search activities, we went to the department for the discussions and Internet search reflections. Figure 4.14 shows students seated for the discussions.

Figure 4.14. *Discussions in AR workshop 1*

I gave a PowerPoint presentation to the students on what we all had done so far. To create an informal atmosphere I made the students play a game where they had to describe their moods using printed smiley icons and also a number and clap game.

After playing the game, we moved on to the discussion and reflecting on the Internet search activities. The students started to discuss the experiences from the Internet activities that they had done the same morning which is shown above in Figure 4.14. The factors around which the discussions were based have been stated previously in this chapter (Refer Figure 4.11). The students' reflections will be discussed in detail in the Analysis Chapter (6).

4.3.4 Expected Learning Outcome of Internet Training: 1 and Action Research Workshop: 1

Even though the recall of knowledge is the lowest level of the taxonomic levels, it is crucial to the process of learning (Churches, 2009). In this phase of training and workshops, students were expected to achieve a familiarity with the key element of the taxonomy in a digital medium, which is the retrieval of material. They were also expected to be familiar with bookmarking and networking.

Figure 4.15 below explains the learning outcomes for the students through the first phase of Internet training and the action research workshop.

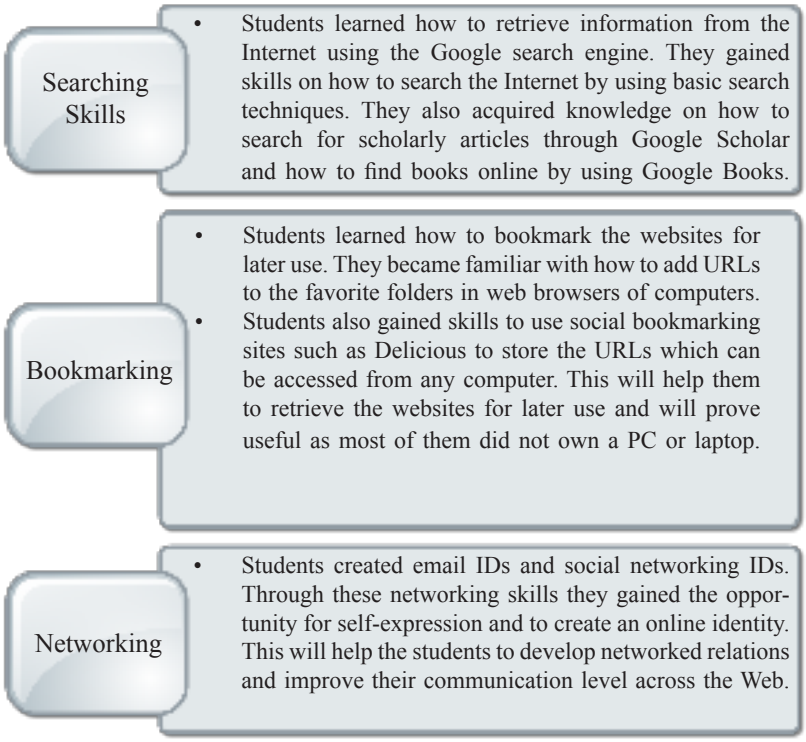

Figure 4.15. *Expected learning outcome of first Internet training session and AR workshop*

One of the main challenges faced in this workshop, similarly to the future workshop, was that students were not opening up. The experience of reflecting and sharing their learning activities was new to them. I also believe that they felt that if they said something wrong it would create a wrong impression of them in the group and for me as the researcher. I attempted to convince them that they could feel free in this forum, and they should not think of it as a formal session. I reminded them that they were there to learn and the only way to improve is by discussing their feelings and problems deeply. I spent much time encouraging them to articulate their experiences.

4.3.5 Internet Training Session – Phase 2 (Understanding and Applying)

The second phase of Internet training was designed based on the learning domains of "Understanding" and "Applying".

"Understanding" builds relationships and links knowledge (Churches, 2009). The cognitive process is represented through key verbs that include interpreting, summarizing, inferring, classifying, comparing, explaining and exemplifying. Digital verbs associated with "Understanding" are advanced and Boolean searching, categorizing, tagging, commenting, annotating, and subscribing (Churches, 2008, 2009).

"Applying" implies carrying out or using a procedure in a given situation, and the verbs which describe the cognitive process are implementing, carrying out, using, executing, showing and exhibiting (Krathwohl, 2002). Digital verbs associated with "Applying" are running, operating, uploading, sharing, hacking and editing (Churches, 2008, 2009).

Figure 4.16 shows the selected learning activities from the learning domains of "Understanding" and "Applying" based on the Blooms digital taxonomy.

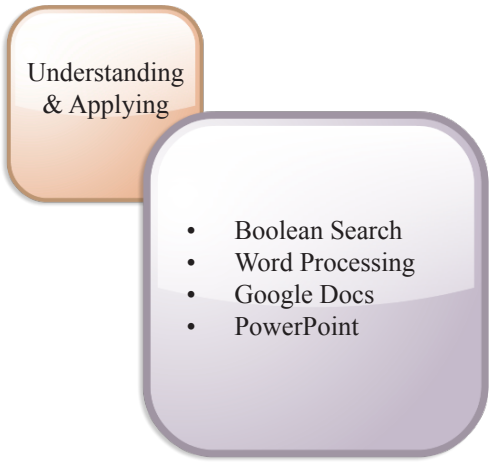

Figure 4.16. *Internet activities selected for the domain "understanding" and "applying"*

Boolean search is more complex than a simple search. In order to do Boolean searches "[s]tudents require a greater depth of understanding to be able to create, modify and refine searches to suit their search needs" (Churches, 2009, p. 17). Boolean searching was introduced in this training phase so that students could be more successful with their search results through Boolean operators and search strategies. Word processing was selected as a learning activity for the students because it facilitates the digital activities of collecting, summarizing and explanation (Churches, 2009). In my view, when a student

searches and retrieves information, the data has to be collected and presented in some form especially as regards learning activities. When students learn how to create a Word document, they can collect and present the online data and can take copies and printouts for future use. PowerPoint was also selected as a learning activity in order for them to learn how to do a digital presentation to an audience. Students were expected to do an individual seminar presentation based on topics from their curriculum. Usually they would do this only with the help of handwritten notes. PowerPoint was introduced so that they could use it as a tool for their presentations in seminars. To learn how to collaborate online and develop a shared document, Google Docs was selected as an activity introducing them to the concepts of editing, sharing and collaborating online. This activity was somewhat difficult for the students and I observed that most of them were confused and in doubt.

4.3.6 Action Research Workshop 2

Students attended: 11

"Understanding & Applying" were the learning domains based on which the second action research workshop was conducted. The students were asked to do two Internet activities in this workshop:

1. To create a shared Google document: The students were given two topics to search for on the Internet. Topics given for the Google search were about searching for four to five facts about the first women prime minister in the world and educational status of women in India. Then they were to create a shared document based on what they found from the Internet search.
2. To create a PowerPoint presentation. The topic for the PowerPoint presentation was the Millennium Development Goals. Students were paired to do the activities.

They made use of Boolean operators in the searches, which they had learned during the previous training session. I observed that the students were very enthusiastic about searching for information and making PowerPoint presentations because it offered them another way of making presentations for individual seminars instead of paper based presentations.

After doing the Internet activities in the Internet café, we went to the department and I started off with my presentation on the process so far.

The first round of discussion was about creating the shared document and how they undertook the Internet search for the content of the document. The discussions were far better compared to the first workshop. They showed their abilities in using the Internet, and they were successful in searching and finding the correct information. However, the students reflected on the difficulties in creating a shared document, as it was their first experience of collaborating online.

After the first round of discussions, the students were asked to play the game "Stranded in an Island" to bring in an element of fun.

Since it was the second workshop and they had been using the Internet for some time, I found it a good time to ask them how they perceived the Internet. This was mainly done to get an understanding of what the Internet means to them and in which way they find it useful. I asked them to write down their thoughts on colored sticky notes that were later displayed on a flip chart. There was a lunch break and after this activity, and in order to create a lively atmosphere, we played the game "Counting the word" when we returned in class.

The next activity in the workshops was discussions and reflections based on the PowerPoint presentation as shown in Figure 4.17.

Figure 4.17. *Reflections regarding Power-Point presentations*

The Power Point presentations that they had created in the Internet café were saved on a USB stick in order to be presented and discussed in the workshop. The students first had to search for information about the Millennium Development Goals. In this activity, all the students were successful in getting the right information from the Internet. However, when they were to present their PowerPoint slides most of them had problems. They had difficulties in getting the correct formatting of the Power Point presentation and thus became frustrated. They explained that they had wanted to learn this technique because they would like to use it for their upcoming individual seminar presentations. After the discussions, I carried out informal interviews asking what changes they had experienced since the training and workshops had started. I asked for the students' feedback on how the training and workshops might be improved.

4.3.7 Expected Learning Outcomes of Internet Training: 2 and Action Research Workshop: 2

Figure 4.18 shows the learning outcome of the second Internet training session and action research workshop 2.

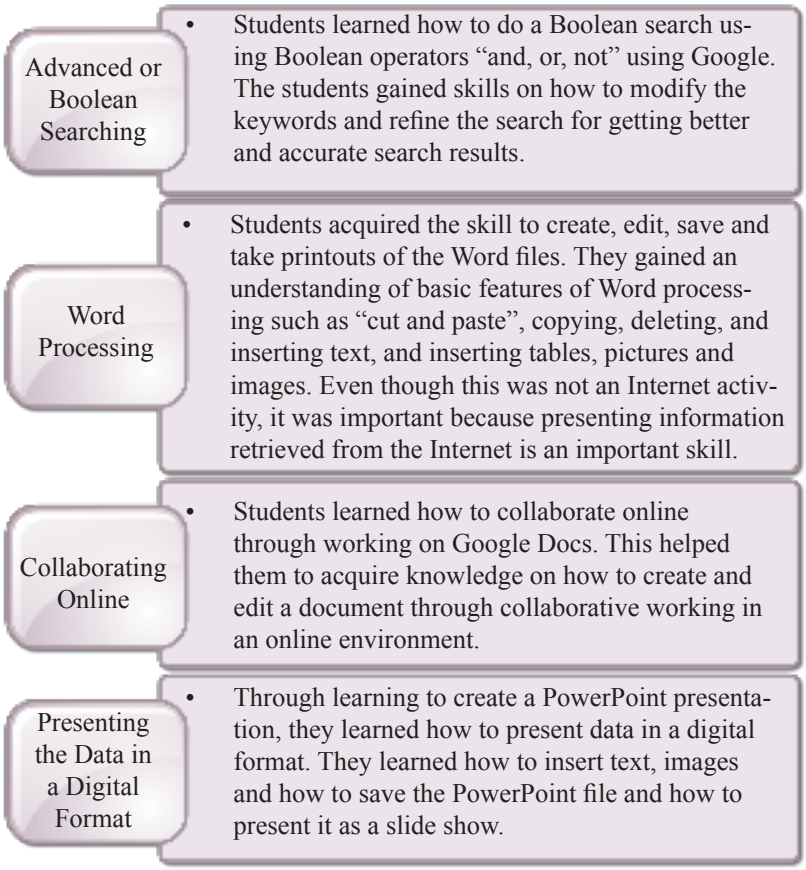

Figure 4.18. *Expected learning outcome of second Internet training session and AR workshop*

4.3.8 Internet Training Session - Phase 3 (Analyzing and Evaluating)

The third Internet training session was based on the learning domains of "Analyzing and Evaluating". "Analyzing" means breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose. The cognitive process associated with this key term are differentiating, organizing

and attributing (Krathwohl, 2002). The Digital verbs for "Analyzing" include mashing, linking, reverse engineering, cracking and mindmapping.

"Evaluating" implies making judgments based on criteria and standards and verbs which explain the cognitive process are checking and critiquing (Krathwohl, 2002). The digital verbs associated with "Evaluating" are blogs and video blogs, commenting, reflecting, posting, moderating, collaborating networking, testing and validating.

Figure 4.19 below shows the selected learning activities based on the learning domains of "Analyzing" and "Evaluating" based on Blooms digital taxonomy.

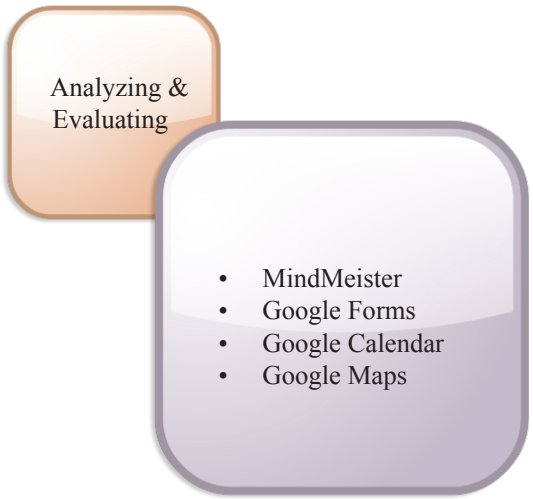

Figure 4.19. *Internet activities selected for the domain "analyzing" and "evaluating"*

To introduce the concept of mindmapping, the students were taught to use the online tool MindMeister. Through learning to use this tool, they learned how to construct meaning and relationships with digital data. Google Maps was selected so that the students could investigate an online environment and learn to use a geographical information system. They became familiar with how to find directions and navigate as well as using zoom in and zoom out. Google Forms was introduced with the motivation of giving the students an experience of how to do an online examination. Usually Google Forms is a series of questions

which are set by a user and published on the Web for people to answer (Churches, 2009). I used it as an online test with multiple-choice questions. They only answered the questions and did not process the answers using the spreadsheets. To learn how to organize data online, students were familiarized with Google Calendar. The intention was to present a way of using the Internet for managing their daily activities and for collaborating with others.

I observed great progress and tremendous improvement in their searching skills. The students had become confident in using the keyboard and mouse and they looked very comfortable. They were curious to learn how to use the tools and were self-motivated.

4.3.9 Action Research Workshop 3

Students attended: 12

Action research workshop 3 was based on the Internet training given to the students concerned with Bloom's Digital Taxonomy of learning domains of "Analyzing" and "Evaluating".

The previous two workshops had been conducted during public holidays, and since the hostelers go home during holidays they were in a hurry to leave because they had to catch a train or a long distance bus. Apart from this, much time was lost in the previous workshops due to power failures and time spent on walking from the Internet café to the department. I spoke to the Head of the Department about these issues, and she agreed I could use two afternoon sessions during the working days where the students had no classes. Therefore, the third workshop was conducted in two phases on the afternoons of two working days in order to get maximum participation and to fully utilize the time.

The Internet activities in the workshops were based on what they had learned in the previous Internet training session and were as follows:

1. To create a mindmap using mindmapping software. I did not set any particular topic because I wanted them to be creative and bring their own ideas.
2. To do an Internet Acronym Quiz using Google Forms. The rationale for choosing this activity was mainly because I wanted them experience doing an online test. The quiz consisted of eight multiple-choice questions. The students searched for answers on the Internet and thus used their searching skills while using Google Forms.

The students were enthusiastic, and they seemed confident of what

they were doing while also having some fun.

Instead of asking questions about the specific tools which they had learned to use during Internet Training Session 3, I asked them to reflect on any problems they might have in using any of the five tools they had learned until then. I did so because the tools such as Google Calendar and Google Forms that they had learned to use in Internet Training Session 3 seemed less complicated for them to learn. I presume that this was due to them being more comfortable with the Internet than before.

For the reflection process, the students first wrote down the problems that they faced in using the Internet individually. They were then divided into groups and asked to discuss the problems they faced and to find solutions for these problems. After this activity, they were asked to make a drawing that reflected the problems and solutions for using the Internet which is shown in Figure 4.20. Based on the future workshop, I expected them to be comfortable speaking through using the drawing as an artifact. The reflections through drawings will be discussed in Chapter 7.

Figure 4.20. *Students using drawing as a reflection technique in the third AR workshop*

In this workshop, I organized a group interview about what difference it would have made if the researcher or trainer would have been a man. The students reflected on the socio-cultural factors that would influence their decision to come for the training and going to a public Internet café if the researcher would have been a man. This will be discussed in Chapter 5.

To have an element of fun, we then did a quiz on "Guessing the Personality" of prominent women in India as shown in Figure 4.21.

Figure 4.21. *Quiz session to bring in an element of fun*

In this workshop, I also asked them to reflect on how they felt empowered through using the Internet by writing keywords on sticky notes as shown in Figure 4.22. Students were asked this question because it was the third workshop and I wanted to see if they had observed any changes through using the Internet. The students' reflections will be discussed in Chapter 7.

Figure 4.22. *Students reflecting through sticky notes on how they feel empowered through Internet usage*

4.3.10 Expected Learning Outcome of Internet Training: 3 and Action Research Workshop: 3

Figure 4.23 shows the expected learning outcomes of the third phase of Internet training and action research workshop 3.

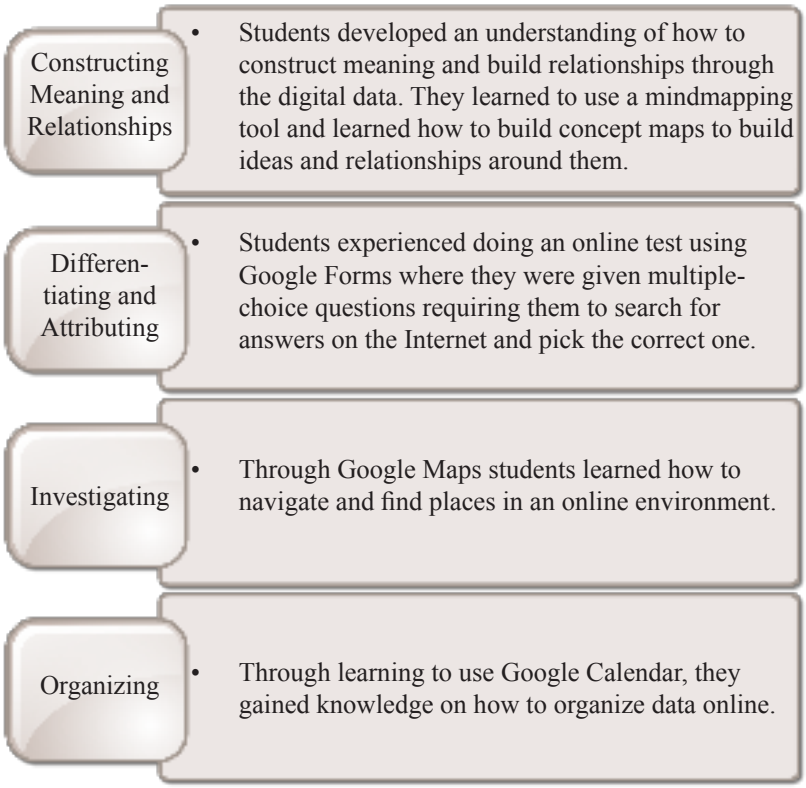

Figure 4.23. *Expected learning outcome of third Internet training session and AR workshop*

4.3.11 Internet Training – Phase 4 (Creating)

The fourth phase of the Internet training was based on the learning domain of "Creating". Creating implies putting elements together to form a coherent or functional whole, and the key verbs which describe the cognitive process are generating, planning and producing (Krathwohl, 2002). The digital verbs connected to "Creating" are programming, filming, animating, video casting, podcasting, mixing and remixing, publishing, directing, producing, building and compiling mash-ups. The emphasis of the research project was to introduce the students to concepts of creating digital document. Churches (2009) state that a digital document is not limited to a word processed product, rather it could be a blog, a wiki entry, a web page, slideshow presentation, DTP product etc.

Figure 4.24 below shows the activities selected for the learning domain of "Creating" based on Bloom's Digital Taxonomy.

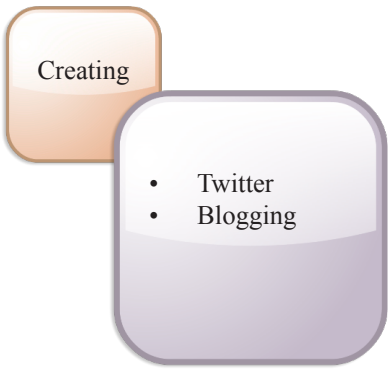

Figure 4.24. *Internet activities selected for the domain "creating"*

The digital activity that was selected for learning in the final stage was publishing. In this training session, all the students created a blog page and created Twitter ID, which is a microblogging site. They were quite fascinated by the fact that they could be in touch and could send direct messages to their favorite personalities from arts and literature. The other activities in the learning domain of "creating," for example programming, filming and animating, would have been more complicated for the students as they have not reached the level where they could do these activities. Therefore, I only introduced publishing digital content as the learning activity.

4.3.12 Action Research Workshop 4

Students attended: 9

The learning activities selected for the fourth phase of Internet training were Twitter and Blogging keeping in mind the Internet skills and capabilities of the students. There was not much scope for discussions in the fourth workshop concerning the two tools they had learned. So apart from getting to know how they learned to use these two tools, I mainly used the final workshop to gain an understanding of the overall change the students had experienced in using all the Internet tools.

Students were given an multiple choice test based on all the tools and applications they had been introduced to through the research as shown in Figure 4.25. The students were also given a questionnaire so as to understand their familiarity and knowledge levels with the tools and applications before and after the workshops and training.

Figure 4.25. *Students performing the multiple-choice test*

The main knowledge creation through this action research workshop concerned how the students felt they had become empowered through learning to use the Internet. Drawings were again used as a data collection method as shown in Figure 4.26. As stated in the research design chapter, the cognitive process participants use when they are asked to draw is different from when they are asked to verbalize or write about their experience (Kearney & Hyle, 2004). Since the change was in the form of empowerment, which is a difficult term to interpret, drawing was an excellent way to help me learn about their experience and feelings with a different thought process than verbal statements.

Figure 4.26. *Students doing drawing*

The students were divided into two groups. They discussed their experience of being empowered and each group made one drawing as shown in Figure 4.27. Interpretations of the drawings will be discussed in Chapter 7.

Figure 4.27. *Students engaged in making drawing in the fourth AR workshop*

4.3.13 Expected Learning Outcome of Internet Training: 4 and Action Research Workshop: 4

Figure 4.28 shows the expected learning outcomes of the fourth phase of Internet training and action research workshop 4.

Publishing	• The students gained an insight on how to create data and post it online. They learned how to use a blog and how to get it published. They also gained knowledge on how to use the microblogging site Twitter.

Figure 4.28. *Learning outcome of fourth Internet training session and AR workshop*

4.4 Final Evaluation Workshop

The objective of the evaluation workshop was mainly to gain an understanding of the students' experiences. The students filled out the empowerment indicator questionnaire in which they were asked the changes which they experience through the indicators developed for the research. Informal interviews were undertaken where students were asked to share their feelings, learning experience and their overall opinion of the training and workshops.

4.5 Challenges in the Field

I had to confront several issues as a researcher in the field. Dearden et al., (2007) states that "[d]eveloping-world projects are, by definition, conducted against a background of severely constrained resources"(p. 2827). Technical, environmental and cultural challenges are common while doing technology-based research in developing regions (Brewer et al., 2006). These statements also hold true for this research as I experienced challenges due to of technical and cultural factors.

4.5.1 Technical and Infrastructural Challenges

The research project faced infrastructural challenges in the form of unavailability of computers and Internet connection in the university. At the time of the research, the department had only two computers with Internet connections. The university Internet center had eight to ten computers but they were not allowed to be used for any projects outside the university. My search for renting a space with a private computer training institute also turned vain due to the basic criteria that it had to be located within one kilometer of the university and there had to be at least four to five computers with Internet connections. Finally, I decided to rely on public Internet cafés in the vicinity of the department for giving the training.

These Internet cafés could not be booked in advance as they are open to the public. Therefore, I could not be sure that there would be available computers during the scheduled training sessions. Some days we had to go back to the department because the three cafés nearby were already occupied with users. This was also the case in the first action research workshop. I subsequently asked the Internet café owner if he would reserve the time slot for me but he declined. Another technical problem faced was that some computers in the Internet café had faulty keyboard and computer mouse making the Internet usage experience unpleasant.

Another technical or infrastructural issue that was faced in the field was power failures. Much time was lost due to power failures in the Internet cafés during the training sessions. Sometimes power failures lasted for a long time and after having waited for half an hour the training had to be stopped as the students otherwise would be late getting home in the evenings or late for the classes in the morning.

Power failures were also a problem in the action research workshops. Much time was wasted due to power failures in the first two workshops.

The format of the workshops was that the students would do the Internet exercises in the nearby public Internet cafés and we would meet at the department for discussions afterwards. When the students started to work on the Internet and the power went off, some students had to re-do their activities because they had not saved their work. The constraints due to power failures identified in this research project are similar to other researchers' experiences that power shortage or failure is a major challenge for Internet usage in developing countries (Hatakka & Lagsten, 2012).

4.5.2 Cultural Challenges

The research project faced cultural challenges due to the time restrictions that affected the mobility of the students in staying late for Internet training and for action research workshops.

As mentioned earlier, since I could not use normal class hours, I had to make use of the hours in the morning before the classes started and in the evening after the classes was over. Day-scholars coming from home could not stay beyond a certain time in the evenings as they were expected home before dusk because of personal safety. Even for conducting the action research workshops, the university did not grant me the permission to use the normal working days, and workshops were conducted during the weekends or public holidays. In these holidays, most of the hostelers wanted to leave early as they had a train or bus to catch. Their families also expected them to be home before dusk. Students' restricted timing and the reasons their parents expected them to be home before dusk is the result of a gendered role definition of being a woman of the culture that they came from. In the developing countries, women have unsecured mobility when they are alone and in public places at night (Wangmo et al., 2004). These factors of mobility will be discussed in detail in chapter 5 and 6.

The restricted mobility of the students also placed time constraints on conducting the research. Because when it was getting late in the evenings, the students started to worry about missing the bus and getting back home which some times diverted them from the training. Some day-scholars had to wait for a long time if they did not catch the bus at a particular time. This limited the scope for training during the evening. Classes finished at 16:00 in the afternoon, which meant that the training could start no earlier than 16:30. Day-scholars preferred to leave around 17:30 to 18:00 and hosteler students preferred to leave around 18:00 to 18:30. This made the timing available for giving Internet training limited. If I wanted to conduct the training in the

morning, 9:00 was the earliest possible due to the opening hours of the Internet cafés and classes started at 10:00.

4.5.3 The Multiple Role of being a Researcher

As a researcher, I also had the challenge of balancing the multiple roles of a researcher, trainer and being a "friend" to the students. Action research is distinctive as the researcher has the dual role of a researcher as well as an implementer of the project and sometimes that of a critical friend (Cox & Robinson Pant, 2008; Trondsen & Sandaunet, 2009). As reflected in the research design chapter (3), the researcher in an action research project is not objective but rather openly acknowledges the bias to other participants and is more a facilitator for the research (O'Brien, 2001).

Donning the hat of these multiple roles was very challenging. My descent being a native of Kerala did help me in building a rapport with the students. However, I could feel that they were not comfortable interacting with me in the beginning as they had concerns regarding whether they could build a good relationship with me. I made an effort of bringing informality to the relationships so that they would not feel intimidated because of the fact that I am older and a researcher from a foreign university. In this culture, people who are older are always treated respectfully, and if someone has a higher education, and that too from a foreign university, it might make the person feel superior to them. I went out with the students for tea sessions so as to build an informal relationship and get to know them better as a person and to make them feel that I am approachable.

As a trainer, I had to design, organize and execute the training programs and workshops. Giving Internet training to the students was challenging as I was the only trainer for twelve students. As an action researcher, I was a co-creator of knowledge, and I had to be observant of the process of the research and keep track of how the discussions were going. So the whole process required that, as a researcher, I had to build the knowledge of how the students solved the problems in learning to use the Internet while, as trainer and implementer, I also had to contribute as a facilitator in these discussions.

Another challenge that I faced as a researcher was to bring the fundamental characteristic of action research into the workshops, which is collaboration and dialogue to generate knowledge. As mentioned earlier, some of the students were shy and reserved and were not vocal in the discussions. This was very challenging, and I had to motivate

them to express their thoughts, feelings and experiences. These kinds of workshops and reflective sessions were novel to them, and I had to make sure that the environment was friendly and supportive so that they would gain confidence to speak in the group.

4.6 Summary

The objective of Chapter 4 was to give an outline of the empirical studies by describing the interventions through future workshops, Internet training, action research workshops and the final evaluation workshop in a sequential order.

Future workshop was an effective technique that helped me in understanding what kept the students from using the Internet by assisting them in thinking out of the box. Apart from learning which barriers they met for using the Internet, it also allowed me to gain insight to what they believe to be possible ways of achieving those preferred situations where they would use the Internet. Moreover, the future workshop also helped me to get picture of the students' worries, dreams and hopes.

Blooms Digital Taxonomy was very effective for training as it gave a scope for organizing the training and selecting a common learning path for the activities for all the student participants. I argue that Bloom's Digital Taxonomy is an effective approach for training novice women users from a developing region to use the Internet. In this research, since most of the students were new to using the Internet, Bloom's Digital Taxonomy helped me to develop a learning process whereby students could start learning from the least complicated activities and move on to more complicated activities as they progressed in the training. Bloom's Taxonomy places emphasis on the thinking skills of the students rather than focusing on the content of the Internet, and this approach to learning to use the Internet can bring more effective long-term results because the knowledge they gain on how to use the Internet is what they can use throughout their lives whereas the specific content of the Internet may become obsolete over time.

Action research workshops provided a platform for the students to share and reflect on how they learned to use the Internet, which supports the social learning theory of learning from one another. By designing one phase of Internet training based on one or two learning domains, followed by an action research workshop based on what they had learned in the training sessions, brought effective results in terms of making the learning less complicated and less cumbersome

for the students. This way of organizing the learning helped them to reflect and learn from one another. Having action research workshops in between the training facilitated to recall the learning faster instead of having to recall what they had learned in the training several weeks previously if the workshops were to have been conducted in the end.

In the empirical studies, I did face challenges in the form of technical and cultural factors and also in managing the multiple roles of a researcher. Even though some factors were beyond my scope as a researcher, I did manage to generate the knowledge that the research demanded, which also proves that this type of research can be carried out in a developing country context. These types of challenges are inevitable while doing intervention oriented research in developing regions, and researchers should be prepared to face such challenges and make sure to adopt a research methodology that provides scope for flexibility in conducting the research.

In the next chapter, I will discuss the analysis and findings of the barriers that the students faced in the successful usage of the Internet.

CHAPTER 5

Analysis & Findings: Barriers for Internet Usage

The aim of this Chapter is :

- To answer the first research question concerning the barriers for Internet usage for the woman students in the research context.
- To explore the gender element of the training, which needs to be considered for projects aimed at ICT learning in a developing context based on the analysis of data from the students' reflections.

ICTs are not gender neutral (UN, 2002b) and the constraints or barriers that women face in accessing ICT or the Internet vary among countries as women are not a homogenous group and their experiences as women differ across and within countries, especially in rural and urban contexts (Melhem et al., 2009). There are many studies in the literature which show that women face barriers for accessing ICT/ Internet (Best & Maier, 2007; Hafkin, 2002; Huyer & Carr, 2002; Huyer & Sikosa, 2003; Krishnatray et al., 2010; Melhem et al., 2009; Vijayalakshmi & Bhavani, 2006; Wangmo et al., 2004). Since the research concerns empowering women through learning to use the Internet, an in-depth understanding of what barriers they faced in using the Internet specific to their context was imperative because, as argued by Gajjala (2002), the gendering process within communities which influence the use of technologies is significant to understand the empowering potential of the specific technology.

In this research, the women in the group are master's students in a university in Southern India. Therefore, the barriers that they face in accessing and using the Internet will reflect the contextual and cultural factors that are specific to their region. The fact that they are educated and attend a university indicates that they are privileged and thus more likely to access and use ICT and Internet, as education and literacy are the main factors for accessing and using ICT for women users. (Best & Maier, 2007; Huyer & Carr, 2002; Melhem & Tandon, 2009; Umrani & Ghadially, 2003; Wangmo et al., 2004). However, I observed that even though they were educated and university students, they did not use the Internet for their academic activities and were not taking advantage of the possibility of accessing and using the vast amount of information that might add value to their lives.

As discussed in Chapter 3, I have used a mixed method approach in the research design. Mixed methods were used to find the barriers which made Internet access difficult for the students with the purpose of triangulation.

5.1 Barriers for Internet Usage

There were two categories of barriers which made Internet access difficult for the students. Firstly, I will discuss the identified barriers due to first order effects which hampered the students' Internet usage, and then I will discuss the barriers, which were the result of second order divide.

Figure 5.1 below illustrates the student-identified barriers for Internet usage, categorized as first order and second order divide effects:

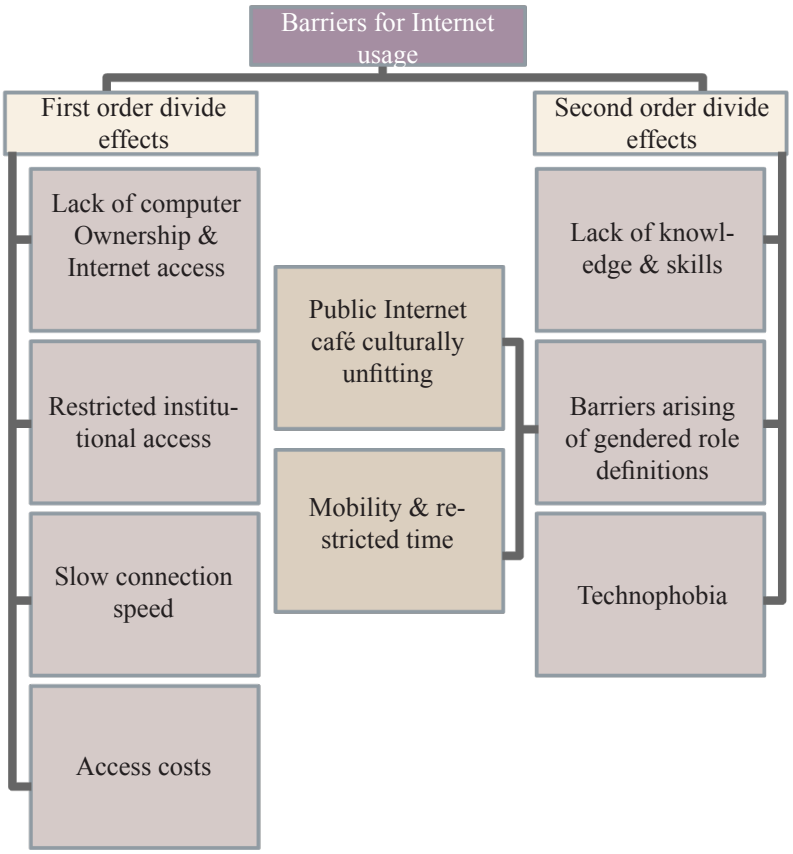

Figure 5.1. *Categorizing barriers as first order and second order effects*

5.2 First Order Divide Effects

First order divide addresses what makes access difficult measured in terms of physical and technical parameters (Dewan & Riggins, 2005). In this research, the first order effects identified were measures of

infrastructural barriers and barriers arising due to cost.

Infrastructure means having the means to access ICT. As indicated by Primo (2003), "if the technology is not there, women cannot have access to it" (p. 39). In the research context, it was the specific ICT tool that the research focuses upon, the Internet, and infrastructure concerns availability and uninterrupted and fast Internet connections. Powerful broadband networks are crucial for getting an edge in the knowledge economy, and countries should give significance to this and consider broadband networks as part of the basic infrastructure (GITR, 2011). In the research context, first order effects that made Internet access difficult for the students were identified as not having personal ownership of computers and Internet connection at home, not having requisite Internet connection at the educational institution, slow Internet connection speed and the cost of access.

5.2.1 Lack of Computer Ownership

Household ownership of computers along with Internet access are major contributing factors to people's proficiency with digital literacies (Hawisher et al., 2004). I observed that lack of computers at home had an effect on the students' Internet usage. Out of the twelve women students in the group, there were only three who owned a personal computer. Out of these three students, only two students had Internet connection at home, and none of them owned a laptop. In the informal interviews, students also reflected that not having a computer and Internet connection at home was a barrier for using the Internet.

The students were not from well-to-do families where they could afford personal computers. This factor is also reflected in the Global Information Technology Report stating that only six percent of the Indian households own a PC, and broadband Internet remains the privilege of the few, with less than one subscription per 100 persons in India (GITR, 2012).

For the students in the research context, if they had a personal computer at home, they would have the advantage of accessing and using Internet at their convenience. Having an Internet connection at home, would give the women users the freedom to explore more Internet sites (Hargittai & Shafer, 2006), and this was also reflected in the students statements:

[1]Tahira reflected in the fourth AR workshop: *"If there is Internet at home, we can give it a try [implying using the Internet]. Even if we don't know [how to use the Internet] we can try to learn" (ARW4).*

Tahira reflected that Internet access at home can make a difference because it gives her the possibility to try it out and to learn.

The two students who had Internet connection at home were Deepa and Mubeena, and their statements indicate the fact that access remains easiest for those who are connected from home (Hargittai, 2003).

Mubeena had mentioned informally during the training session that she has practiced using the Internet at home during weekends more often since the Internet training and workshops started.

Deepa, who was a hosteler like Mubeena, also expressed in the fourth AR workshop that she updates the blog she created during the Internet training when she goes home on weekend. "Now I add to my blogs when I go home."

Deepa also added in the fourth AR workshop that since she has an Internet connection at home it is easier for her. *"I'll use [the Internet] every time. Since I have connection at home also, it's easier" (ARW4).*

Mubeena and Deepa were quite familiar with using the Internet and had knowledge in using Internet which substantiates the fact that those with computers at home are more likely to be knowledgeable than those who do not have computers at home (Hargittai & Hinnant, 2008).

Thus, the finding illustrates that lack of personal computers at home was a barrier for the usage of Internet for the students. Therefore, it was not a surprise that they were not using the Internet frequently, as they did not have the opportunity to check the Internet from home. The finding is consistent to what Johnson (2010) found in her study that non-availability of computer at home was one of the factors which contributed for women users lack of Internet usage in the southern city of Chennai in India. Since restricted mobility is a significant cultural factor that influenced their accessing and using public Internet cafés, a personal computer in their home at their disposal would have made a significant difference.

The students had a common Internet access facility through the institution where they were studying. Even though they did not own a computer, the students could use the institutional facilities for

Reference (ARW) indicate action research workshop with the number and (SR12) indicate student reflections in 2012 from the Empirical Work Report (Purushothaman, 2010)

accessing the Internet. In the following section, however, I will explain why the institution did not facilitate Internet usage.

5.2.2 Restricted Institutional Access

With regards to the institutional context, the department had two computers with Internet connection, but the students were not allowed to use it. They had the option to use the university Internet center for 10 INR per hour, which was open to all students at the university. However, the center had only eight to ten computers in total, so the ratio of number of computers to the total number students of the university was very low. The university Internet center was quite far from where the department was located and this made the students hesitant to go there and use the facilities after class hours, especially for the day-scholars who had to take a bus back home. Furthermore, the center did not provide facilities for the students to take printouts if they wanted to download and print the materials and information retrieved from the Internet.

Thus, proper and requisite Internet facilities at the department and universities would have significantly improved their Internet usage. As reflected by two of the students, Reshma and Deepa:

Reshma expressed in the fourth AR workshop: "*See …There is Internet connection in this computer… if we can use this, it's a big relief and very useful for us…"(ARW4).*

Reshma's reflection shows that it would have been helpful if the department would have had computers with Internet connections which they were allowed to use. She was one of the students who did not own a personal computer or had an Internet connection at home.

Similar to Reshma, Deepa also expressed in the fourth AR workshop that *"It would have been easier if we had a computer here"(ARW4).*

Deepa was a hosteler, and she did have a computer and Internet connection at home. Even though she had access at home, she also expressed that if there were sufficient Internet facilities at the department, it would be convenient for her and other students in the class.

This finding of the institutional barrier for using the Internet substantiates what is indicated in the study by (Sharma & Singh, 2010) to understand the pattern of development of ICT within six universities

of the Western Himalayan region of India; the authors recommend that universities should be provided adequate Internet bandwidth, and they also recommend ICT based connectivity among various universities and institutions so as to share knowledgeable e-resources. Since this university under study is directly under the government control, the decision to implement computers and provide Internet access is also influenced by the policies and decisions of the government and the allocation of government funding to implement ICT. Reddi and Sinha (2004) have reflected that a major barrier for the technological use in the educational sector in India is policies and the government hierarchical and bureaucratic systems of administration that exist in the educational institutions.

Through the 11th five-year plan, the Government of India has launched the National Mission on Education through ICT to increase the access and usage of ICT in the universities and colleges, realizing the potential of ICT. The mission aims at working to leverage the potential of ICT to provide high quality, personalized and interactive knowledge modules over the Internet/intranet for all learners in Higher Education Institutions in an "anytime, anywhere" mode (NME-ICT, 2009). However, the level of thrust, directions and guidelines influence the implementation and success of the mission (Snehi, 2009). This was mirrored in this study where the university did not have the requisite facilities to use ICT, and the Internet facilities for the students were insufficient, in spite of the budget allocation and emphasis on ICT for universities and colleges by the central government.

Another underlying factor for the department only having two computers with Internet connections was that the department followed a traditional teaching methodology where the teaching and mode of instructions were predominantly based on lectures. The curriculum did not demand any online activities. There was no uploading of assignments, no mode of online delivery of instructional materials or any kind of engagement of students with ICT.

5.2.3 Slow Connection Speed

High speed Internet connections expands the scope of online activities and transforms the users' online experience (Horrigan & Rainie, 2002). The faster the connection, the more a person can accomplish on the Internet, and the usage can bring more value to the individual person (Davison & Cotten, 2003). Thus, the speed of the Internet connection determines a person's inclination to use the Internet (Hargittai, 2006; Johnson, 2010).

In this research, this was echoed in the students' reflections where slow Internet speed was stated as a barrier for Internet usage.

Out of the twelve students in the research, seven of the students answered "slow connection speed" as one of the barriers for using the Internet through the questionnaire.

During the brainstorming sessions in the critique phase of the future workshop, Internet speed also came up as a barrier for using the Internet through statements such as "slow speed," "slow Internet speed" and "waste of time because of slow speed" as shown in Figure 5.2

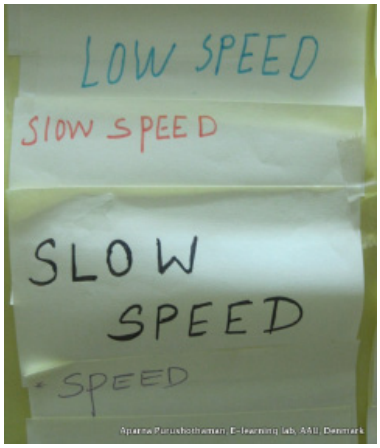

Figure 5.2. *Slow speed indicated as a barrier in the future workshop*

For the students in this research context, the slow connection caused unpleasant experiences when they attempted to use the Internet, mainly through the university Internet center and sometimes for those who visited public Internet cafés.

They felt that because of the slow connection speed they wasted their time as shown in Figure 5.3. This is in line with what is indicated in the literature that when a user's online experience is less gratifying because of slow connection speed they might go online less, and this will affect their information retrieval skills (Dimaggio et al., 2004). Faster Internet connections influence Internet usage, and users can become frustrated with slow download times; also, inability to access certain sites can lead to less enthusiasm and time spent exploring the Internet features by the users (Hargittai, 2003).

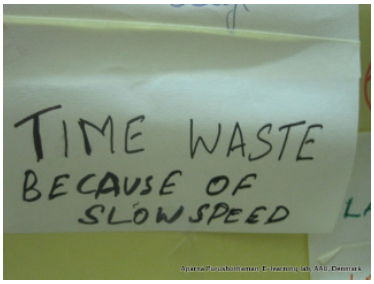

Figure 5.3. *Waste of time because of slow connection speed indicated as a barrier*

Deepa reflected on the Internet experience of using the university Internet center in the fourth AR workshop and cited slow connection speed as one of the reasons for not using the center: *"most of them have slow speed…it's very slow"(ARW4)*.When she revealed this, all

the other students in the group agreed. This finding is in line with the study by Olowa (2012) on Internet use and practices of agricultural science teachers in Nigeria, where it was found that one of barriers that seriously hindered Internet use was slow connection speed. Thus in this research, it was found that slow speed of Internet connections was a barrier which demotivated students from using the Internet.

5.2.4 Cost of Access

One of the major obstacles stated in the literature for accessing ICT by women in developing regions is identified as the cost of access (Huyer & Carr, 2002; Primo, 2003; Umrani & Ghadially, 2003). Best and Maier have indicated (2007) that a reduction in the cost of Internet services can be a factor which influences the Internet usage by women users in India.

Cost or financial problems were reflected as a barrier for the students' Internet usage. As signified earlier, only three students have personal computers at home, and out of these three, only two students had an Internet connection. The reason why the other ten students did not have computers with Internet connection at home was that their families could not afford to buy computers or to subscribe for the Internet connection.

However, there was a possibility for the students to access the Internet through public Internet cafés. In India, an Internet café is a facility that is open to the public to access the Internet on a pay-per-use basis, normally charged by the minute/hour (Haseloff, 2005). Internet cafés are considered a means which helps the marginalized sections, especially women, to derive the benefits of development through Internet (Vijayalakshmi & Bhavani, 2006). However, cost of accessing the Internet cafés were indicated as a barrier by the students.

In the future workshop, statements stated in brainstorming through Sticky notes such as: " "Financial problems," "financial," and "more expensive" as shown in Figure 5.4.

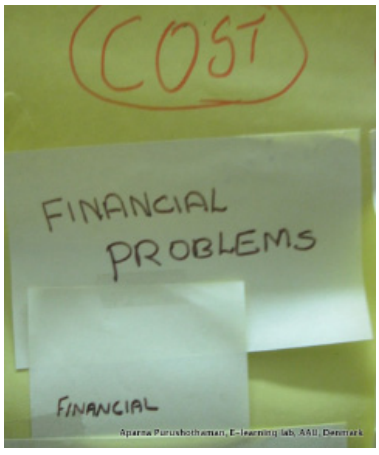

Figure 5.4. *Cost indicated as a barrier in future workshop*

However, I observed that cost of accessing the Internet was not a major issue reflected in informal

conversation and in the group interviews. Only two students suggested the element of cost.

Reshma stated in the fourth AR workshop that: *"it may not be possible to go to the café and use [the Internet] always…because my financial condition is also not that good" (ARW4).*

Anuradha also stated in the fourth AR workshop that her financial conditions are a hindrance: *"I have some financial difficulties, too…so I cannot use the Internet always"(ARW4).*

Both Reshma and Anuradha stated the financial status of their families as an issue for accessing the Internet at public Internet cafés. One of the main reasons for cost comes being a barrier for women in developing countries is that women often have less disposable income compared to men (Hafkin, 2002). However, in this research the participants were dependent on their parents because they were students, and the cost element was thus related to the student's family income.

The hourly rate in a public Internet café was 20 INR at the time of the empirical studies (0.4 USD in 2010), and the cost of Internet access in the university Internet center was even lower, 10 INR (0.2 USD in 2010). This amount was something that they did not find extremely expensive; however, at the same time this amount of 20 INR per hour for using Internet was not something that they could afford daily. This finding is similar to the studies of Best and Maier (2007) and Johnson (2010) on women's Internet usage in South India, where cost was mentioned as a barrier by few participants of the study and was not a significant factor for others.

In this research context, issues of physical access were also identified as barriers for the women students' Internet use such as access, connectivity and cost of access, as is also indicated in the literature (Hafkin, 2002; Huyer & Carr, 2002; Huyer & Sikosa, 2003; Melhem et al., 2009; UN, 2005a; Wangmo et al., 2004). Comparing the results on a national level, the infrastructural issues identified also echoes the country's position in the latest Global Information and Technology Report (GITR, 2012), where India ranked 100 out of 142 countries in terms of its readiness for infrastructure and digital context. This finding determines the fact that India still has a long way to go in terms of providing infrastructural facilities for the deeper penetration of ICT for its citizens.

Thus, the students' access to the Internet was restricted due to first order effects which were beyond their scope. In the following section, I will discuss the second order effects identified to explain the students' use of the available Internet access facilities.

5.3 Second Order Divide Effects

As discussed in Chapter 1, second order divide is characterized by factors which confines the use of the available ICT (Dewan & Riggins, 2005). With regards to Internet usage, the problem of digital divide is not only about physical access and connectivity, but also includes a complex array of factors such as having the knowledge and skills to take information from the Internet, Internet self-efficacy, educational levels and resource backgrounds, internal and psychological forces and attitudes, utility expectancy, and utilization capacity of the Internet users (Dimaggio et al., 2004; Donat et al., 2009; Hargittai, 2002, 2006; Hargittai & Hinnant, 2008; Pan et al., 2011; van Deursen & van Dijk, 2009, 2010a; Walton et al., 2012).

Also in the research, it was found that the barriers for Internet usage for students were not excluded to physical access and infrastructural problems, which characterize first order effects, but also included factors such as lack of skills to use the Internet, and other factors due to the gendered role definitions of the culture and the psychological factor of technophobia.

5.3.1 Lack of Knowledge & Skills

Lack of knowledge to use the Internet was a major second orders divide effect that represented a barrier for students' Internet access. "There is a rising recognition that just connectivity is not enough and knowledge and resources to translate the access into effective use is equally important" (Primo, 2003, p. 40). One of the major elements which contribute to digital divide in Internet usage is insufficient skills to use the Internet (Hargittai, 2002, 2006; van Deursen & van Dijk, 2009, 2010a). Those who fail to find relevant information online are at a disadvantage; for the digitally literate, finding the relevant information out of the increasing amount of information relating to daily life is quick and easy (van Deursen & van Dijk, 2010a).

Lack of knowledge and skills to use the available Internet access certainly represented a barrier for the students in the research; access was not out of reach for the students. They were master's students, and educational level was therefore not an issue that hindered access.

They had the opportunity to use three different Internet cafés within 100 meters of their department. However, I identified that even though they had the opportunity to access the Internet, most of the students did not have the requisite knowledge to make use of the access. The availability of an Internet connected computer is of no use if the necessary skills to access and retrieve information are missing.

Questionnaire data revealed that nine of the students stated that not knowing how to get connected to the Internet was a barrier for using the Internet. In the research context, 'getting connected' is understood on the very basic level as some students did not even know how to use a web browser, which Dimaggio et al.,(2004) call the "recipe knowledge about how to log on" (p. 32). I observed this in the Internet training sessions. Most of the students did not know the names of web browsers and even lacked the knowledge on how to click and get connected. On further investigation through informal interviews, I learned that most of them relied on friends' help if they went to use Internet.

Ignorance and not having the knowledge to use the Internet were also reflected in the brainstorming session in the future workshop as barriers to use the Internet as shown in Figure 5.5.

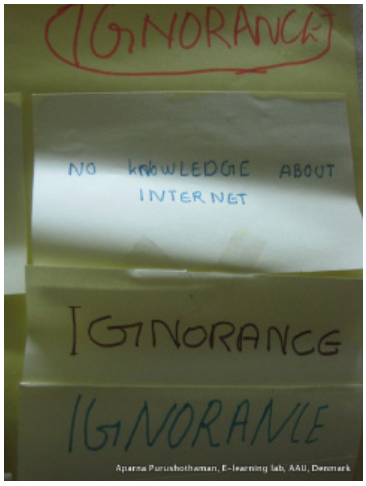

Figure 5.5. *Lack of knowledge or ignorance indicated as a barrier in the future workshop*

"Lack of knowledge about the Internet," "not aware about the possibilities of Internet, "no knowledge, "ignorance" and "no knowledge about Internet" were some of the statements written on Sticky notes.

These factors were echoed when I asked in the future workshop on what level they know about using the Internet and what they expect from the training and workshops. Some of the student stated as follows:

Anuradha: *"I haven't learnt anything about the Internet. I want to know everything. I don't know anything" (FW)* [2].

2 Reference (FW) refers to Future Workshop in Empirical Work Report (Purushothaman, 2010)

Anuradha had attended a basic computer course concerning Microsoft Office skills, but she did not know how to use the Internet.

Bindu expressed that *"Just like everyone, I have learned [to use a] computer from eighth standard to tenth standard in school. Haven't learned anything from outside. I want to learn everything about the Internet" (FW).*

What Bindu means by "not learning anything from outside" is that she has not attended private computer courses like some of the other students in the group.

Soumya stated: *"I know the basics about the Internet. Like Deepa, I face difficulties in searching for information for seminar topics. I know the information is there but I'm not able to download it. The other day we were looking for some information about scholarships. We could see there are a lot of scholarships We're not able to download what we wanted. I know some basics"(FW) .*

Soumya had a computer at home but she did not have an Internet connection; however, she did manage to use the Internet at the university Internet center and sometimes at public Internet cafés. She compared her difficulties in getting the correct information through the Internet to Deepa because Deepa used the Internet in a similar manner. Soumya's reflection illustrates that even though she knows some basics, she faces difficulties in searching and retrieving information.

Lakshmi: *"I don't know anything about the Internet. I want to know all the basics about the Internet"(FW).*

Lakshmi was another student in the group who had inadequate Internet skills and actually knew nothing related to Internet usage. She reflected, like almost all the other students in the group, that she wanted to know all the basics about the Internet.

Thus, the students' reflections revealed that even though they had computer studies as a subject from eighth grade to tenth grade in school, most of them did not know how to use the Internet because of the lack of practical knowledge in using computers in general and the Internet. Some of the students had even taken some private computer courses, which were about basic word processing and data processing skills. However, the courses had been of poor quality and did not provide the scope for using the Internet. They all stated that they wanted to know all the basics about the Internet, mainly searching and retrieval of material.

Learning to use the Internet in the training sessions and workshops was not an easy task for the students because of the lack of sufficient knowledge and skills to use the Internet, as most of them were novice users. Even though almost all information is available through the Internet, the ability to use it to one's benefit is critical for becoming information literate (Edwards & Bruce, 2002). To become an efficient user, skills and knowledge on how to take the relevant information from the vast and enormous source that the Internet offers are necessary (Hargittai, 2006). The students' difficulties in finding the relevant information from the abundance of resources available through the Internet were also reflected when they started with the training and workshops.

In the reflection sessions in the first AR workshop, Tahira explained her Internet usage experience about searching the female population of India as follows:

"I went to Internet Explorer; through a Google search, I typed 'female population of India'. I got many options through the search, and we got confused which was the correct information to be taken. We again searched, again got lot of information on population which was general, but didn't get any specific information on female population, and we searched again" (ARW1).

Tahira's reflection shows that lack of knowledge and skills can hamper Internet usage. When they typed the key word "female population of India," the search gave many results. Their confusion made them search again, which resulted in another list of search results that did not provide the specific information that they were looking for. Her reflection validates what is stated by (Iske et al., 2008) that diverse paths of navigation and usage options in the Internet can make the users too confused to obtain the requisite information.

This was also found in Mubeena's statement in the reflection section of the second action research workshop when she shared their Internet search experience with the group.

"We were confused which one to take.... even though all information is there we are not able to take the information ...so for a lot of time there was this doubt... we know everything is there ... but we do not know how to take it fast....We selected one site where it stated 'first woman prime minster'...we clicked on that ... we got her name... but we did not get much details about her...we did not know what to do... we went back and forth again" (ARW2).

When Mubeena and Shalini were searching for information on the first woman prime minister in India, the search query gave numerous results which made them doubt what the correct information to take was. The confusions are specifically stated when they say "we went back and forth again". This reflection illustrates that surfing from one hyperlink to another will not bring optimal results, and specific navigation and browsing skills are required to find the most relevant information, as is stated in the literature (Savolainen, 2002). Tahira and Mubeena's statements are also similar to an example given by Hargittai (2003) in a study to explore how users' online skills contribute to digital divide; Hargittai found that the users were confused with searching for information on the Internet about political candidates' views on the controversial topic of abortion which resulted in hundreds of possible links to pages making it challenging to find the specific information on a single page.

The findings from this research reinstate the fact that promises of the ICTs and the Internet can be fulfilled only to those with access and competence to use these technologies to their benefit (Mariscal, 2005). With regards to the fact that the participants were woman users, the findings are consistent with the literature in that lack of skills and knowledge is a major hindrance for women's use of computers and ICT (Hafkin, 2002; Huyer & Carr, 2002; Melhem et al., 2009; Primo, 2003; Umrani & Ghadially, 2003; UN, 2005a; World Bank, 2003). Regarding the specific ICT tool which is the focus of the research, the findings also reinstate the fact that lack of skills and knowledge to use the Internet are important elements which contribute to second order divide in Internet access among people (Hargittai, 2002, 2006; van Deursen & van Dijk, 2009, 2010a). Thus, getting access to an Internet connected computer is not the only issue, the knowledge and skills to find relevant information is also a significant barrier for the students' Internet usage.

5.3.2 Technophobia

The literature states that psychological barriers and attitudes towards ICT also contribute to digital divide (Donat et al., 2009; Partridge, 2007). The psychological barrier that affected the students' Internet usage, which was identified in this research, was technophobia, that is, fear of using the Internet and computers.

As stated in the Chapter 2 on the theoretical framework, technophobia is the anxiety about current or future interactions with computers or computer related technology, negative global attitudes about

computers, computer operation or the societal impact of computers, and/or specific negative cognitions or self critical internal dialogues during computer interaction or when contemplating future computer interaction (Rosen & Weil, 1990). People with technophobia possess high levels of computer related anxiety, hold negative attitudes towards computers and avoid interaction with technology whenever possible (Brosnan & Lee, 1998).

Through brainstorming in the future workshop, several students suggested that fear was an issue for accessing and using the Internet. There were statements such as "Fear to deal with technology," "Fear of using Internet," "Fear of technology" and "Fear" which is shown in Figure 5.6

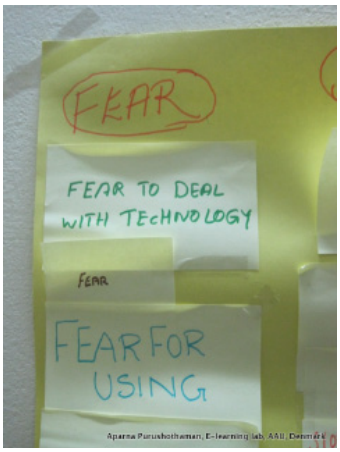

Figure 5.6. *Technophobia or fear of using the Internet indicated as a barrier in the future workshop*

In the informal interviews and in the group interviews, students also suggested the element of fear of using computers and the Internet. Tahira told about such an experience in the fourth AR worksop:

"I had fear of using a computer, like what to do. I know a little bit about computer…as I have attended a computer course before…I know how to send emails. But still searching for information and all was difficult. Was doubtful if I could do it. I knew… but still had a fear of using [computers]…had confusions" (ARW4).

Tahira had attended a private computer course previously, and therefore it was surprising to find that she also experienced fear in using the Internet, which affected her Internet usage. What restricted her Internet usage were mainly her apprehensions of her capability to get relevant information through the Internet. Her statement reflects the fact stated in the literature that technophobia can be the result of computer anxiety which make people doubtful of their capabilities to use computers (Cooper et al., 2003), and in this case it was anxiety which made her doubtful in her ability to use the Internet and especially being successful in the usage.

Technophobia was also reflected in Lakshmi's statements in the second AR workshop, even though she had taken a basic computer course:

"As weakness I feel I don't have enough speed to perform a search. I still get confused as to which information to take, fear that will it be wrong.." (ARW2).

Like Tahira, technophobia or fear was the result of the anxiety that made Lakshmi doubtful and confused, which affected her Internet usage. Lakshmi's apprehensions are not only about getting the right information, but also about her perceived lack of speed. These factors lead to a fear of being wrong in searching the Internet. Apart from her self-reflection, I could also observe that Lakshmi was very anxious and nervous to use computers and the Internet. In the training sessions I could see that she gets anxious to hold the mouse and this will lead to navigating the cursor in the wrong direction and not able to click on what she has intended for.

Another student who displayed high levels of anxiety in my observation was Bindu, and she also echoed a similar feeling in the second AR workshop as Lakshmi:

"I don't have enough speed to do the Internet search. I have tremendous fear." She added further, "I still get confused on what to take from the Internet"(ARW2).

Bindu reflected on the severity of technophobia by stating that she experienced "tremendous fear". She was also apprehensive of her speed, like Lakshmi.

The literature states that women have low comfort levels, feel nervous and feel helpless when they are around computers (Broos, 2005; Shashaani & Khalili, 2001). The statements above from Tahira, Lakshmi and Bindu indicate this nervousness, helplessness and low comfort levels experienced by women users also extend to Internet usage.

Technophobia was also a problem for using Internet for Hima; she reflected in the fourth AR workshop:

"First I was damn scared. Like to sit in front of computer and then to [use the Internet]" (ARW4).

For Hima, her technophobia was reflected not only in using the Internet, but also the very fact of sitting in front of the computer made her fearful and this affected her Internet usage. Hima's statement also validates what is suggested in the literature that Internet anxiety is closely related to computer anxiety (Joiner et al., 2005). The mere

thought of sitting in front of a computer brought feelings of anxiety for Hima, which in turn affected her Internet usage.

The fact that women tend to show higher levels of discomfort with the Internet and that they show more anxiety, as suggested in the literature (Jackson et al., 2001; Schumacher & Morahan-Martin, 2001; Tsai et al., 2001), can be validated through the students' statements in the research.

The students' reflections also holds relevance as regards the claim made by Hargittai (2002) that if the users often give up in frustration and confusion, then merely having access does not solve the issue of digital divide, because it can be solved only with the effective use of the Internet. As discussed in the theoretical chapter, the literature suggests that computer related anxiety, which is one of the reasons of technophobia, negatively affects the computer learning skills and keeps people away from computers despite of the big infusion and availability (Harrington et al., 1990; Rosen & Maguire, 1990; Rosen & Weil, 1990; Tekinarslan, 2008; Torkzadeh & Koufteros, 1994). Since Internet anxiety is closely related to computer anxiety, this fact also holds true for the students in the research. They did not have personal computers, and even though the university had a common Internet center, they were not using it citing reasons of the low number of computers to the total number of students and slow speed of the Internet connection. However, in spite of the availability of the computers within the immediate vicinity through public Internet cafés, which was just a few minutes walk from the department, they did not use the opportunity. Technophobia or fear of using the Internet was one of the barriers that kept them away from using the Internet.

It is suggested that people with technophobia possess high levels of computer related anxiety and hold negative attitudes (Brosnan & Lee, 1998). However, for the students in the research, technophobia resulted from computer related anxiety, and they did not hold negative attitudes towards computers and the Internet. Negative attitudes are defined as "anti-computer" attitudes, which is basically dislike of computers, and positive attitudes are defined as "pro-computer" attitudes (Brosnan, 1998). I observed that the students did not have any dislike for the computers and the Internet; moreover, they valued it and did know the significance of computers and the Internet, and perceived it to be useful. If they had not believed that learning to use Internet would bring value to their lives, they would not have participated in the training and workshops.

The literature states that one of the most pervasive and intractable problems which women have in accessing ICT is technophobia or fear

of technology (Primo, 2003; World Bank, 2003). The findings from this research also verifies that one of the barriers for learning to use the Internet for women students was their technophobia or fear of using the Internet.

5.3.3 Barriers arising due to Gendered Role Definitions

The second order divide that restricted the students' Internet usage was also characterized by socio-cultural factors. These factors were the result of patriarchal traditions and structures that were relevant in the society to which the students belonged. Gendered roles are determined by cultural, social and economic factors, and they differ within cultures and countries (Moghaddam, 2010). Culture is a fabric of the society, and gender identities are essential facets of the culture as they determine the way the daily life is lived not only within the family but also in the society as a whole (UNDP, 2001a). These socially and culturally constructed gender roles and relationships also influence the extent to which women use ICT (Primo, 2003).

In the questionnaire, the students were asked explicitly whether being a woman made Internet access difficult for them, and nine of the twelve students confirmed that it did. This means that they believed that being a woman, and the cultural role definition of being a woman in the culture that they belonged to, influenced and constrained their Internet access. This also reinstates what the literature suggests that culture is a significant factor which can influence a woman's learning skills required for Internet use (Dholakia, Dholakia, & Kshetri, 2003). In the following section, I will discuss second order divide barriers of Internet usage characterized by the gendered role definitions of being a woman in the cultural context of the research.

5.3.3.1 Public Internet Cafés – Culturally Unfitting?

Since most of the students did not own personal computers and the institution did not provide much scope for Internet access, the easiest and most available place of Internet access were Internet cafés. Internet cafés can be considered as the libraries of the future where people can go and get connected to the Internet for a minimal fee (Collins & Halverson, 2010). Internet cafés are a main mode of access for people who cannot afford to have computers and Internet connections at home and the number of cafés is extraordinarily high in India with cafés even flourishing in small towns (Haseloff, 2005; Johnson, 2010; Rangaswamy, 2009; Vijayalakshmi & Bhavani, 2006).

Questionnaire data showed that out of the twelve students only four had tried to access the Internet through public Internet cafés, which shows that their use was negligible. An analysis of student reflections also echoes what has been stated in the literature that students tend to shy away from going to an Internet café.

When asked if she would go to an Internet café Tahira said in the fourth AR workshop that:

"Going to an Internet café and all… I don't think it will be possible. There will be a limitation" (ARW4).

Jasna also reflected in the fourth AR workshop on the discomfort in using an Internet café:

"Going to the café will be difficult for me" (ARW4).

When Tahira states "limitation" and Jasna states "difficult," they define a self-imposed barrier because of the cultural norms that makes it inconvenient for them to visit an Internet café. The students' restricted use of Internet cafés were due to the cultural norms relevant in their society, which meant that Internet cafés were not considered an appropriate place for a woman to visit. As reflected in the literature, women find Internet cafés uncomfortable because in India they are mostly male dominated places (Vijayalakshmi & Bhavani, 2006). Moreover, as discussed in the introduction chapter, there is a secretive nature associated with Internet cafés because of the assumption that they are used for virtual dating, expressing sexuality and flirting behavior (Rangaswamy, 2009). In remote villages and small towns, it is therefore not considered culturally appropriate for women and girls to visit the Internet cafés (Johnson, 2010).

Anuradha also reflected on the inconvenience on visiting an Internet café in the fourth AR workshop:

"I don't have favorable opportunities. If I want to access the Internet, I need to go to town. It's a little difficult and I will not be allowed to go … I have some issues like this at home" (ARW4).

Here Anuradha's restricted visit to an Internet café is due to the location of the café. Anuradha was a hosteler, and if she wanted to use an Internet café at home she had to travel to the nearby town. It was difficult for her to get permission from her parents to visit because it was in the town. Her reflection illustrates what is identified in the literature that location of the Internet cafés influences the women's

Internet usage and that women hesitate to use Internet cafés because they are often located in places they are not comfortable frequenting (Best & Maier, 2007; Hafkin, 2002; Johnson, 2010; Primo, 2003; Wangmo et al., 2004).

In this research context, the student's restricted access was not a case of there not being Internet cafés in the vicinity of the university. As previously stated, there were three Internet cafés that were situated within 100 meters of the department neighborhood. Therefore, it cannot be argued that the students in the research lacked the opportunity to use public Internet cafés. This finding is consistent to what Johnson (2010) found in her study on women's Internet usage in the city of Chennai in India that in spite of numerous Internet centers around the corner, the use of Internet by the women users were negligible.

The findings in the research of this aspect as a barrier for Internet usage reflect that the women students' access and use of public Internet cafés were minimal, and that the cultural factors which defined their roles as a women placed restrictions on them accessing Internet cafés, which were the most convenient place of access for them. It is also stated in the literature that usage of Internet cafés by women in India is minimal (Best & Maier, 2007; Krishnatray et al., 2010; Vijayalakshmi & Bhavani, 2006). Primo (2003) states that "women's access to ICTs is not a simple question of whether there is a computer connected to the Internet that women can use" (p.37); as for the students in the research who did not have Internet connection at home, public Internet cafés were the easiest and cheapest option to use in order to reap the benefits of the digital world, and yet their actual usage was insignificant.

5.3.3.2 Barriers due to Restricted Mobility and Time

Another significant barrier for accessing the Internet was restricted time. Time was reflected as a barrier in two ways; firstly, due to other tasks the students did not think they had enough time in the day to use the Internet, and secondly, because they were expected to be home before dark, the time they could visit public Internet cafés was limited to the daytime.

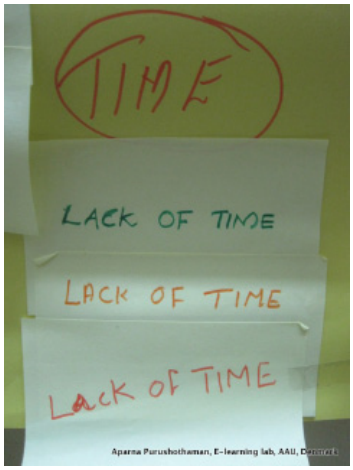

Figure 5.7. *Lack of time indicated as a barrier in the future workshop*

The students reflected on time being an issue for accessing the Internet in

the future workshop as shown in Figure 5.7. The focus was on lack of time to use the Internet, especially due to domestic responsibilities. Because they were women and from less affluent families they had to help their mothers and family with some household chores. This left them with limited spare time; it is also stated in the literature that time constraints due to domestic and multiple responsibilities have been observed to be barriers for women for accessing ICT facilities (Huyer & Carr, 2002; Marcelle, 2000; Primo, 2003; Wangmo et al., 2004).

This finding of restricted time affecting their Internet usage is similar to the study done by Best and Maier (2007) on women's usage of an Internet kiosk (Internet café) in which the participants reflected lack of time as one of the reasons which prevented them from using the Internet. Lack of time was also a factor reported in the study done by Johnson (2010) on women's Internet use in Chennai in Southern India.

I also observed restricted mobility in connection with time as an issue when I gave the Internet training as discussed in Chapter 4. I observed that when the students came for Internet training in the afternoon after the classes, the students staying in the university hostel did not have an issue with staying till 18:30 if someone accompanied them, but they could stay no longer than 18:30. However, the day scholars who traveled some distance preferred the training to end between 17:30 and 18:00 because they had to catch a bus to be home in time. The cultural norms of the society meant that the students were expected to be home before dusk and that influenced the students' mobility and affected their Internet usage. Students' restricted time and their parents' expectations confirm the fact that in the developing countries women have unsecured mobility when they are alone in public places during the night and when they travel home in the dark, as stated in the literature (Wangmo et al., 2004).

Due to my personal background as a woman from the same culture, I was extremely aware of these cultural norms, and I therefore made sure to give the training in pairs in order for them to have some company when taking the bus home. So the pairing was done with that in mind so that students who traveled in the same direction were paired. I did this because, as reflected by Primo (2003), the social customs in the society restricts the women's mobility and forbids them to travel unaccompanied. I paired them so they would feel comfortable and also for the families' sake so they would know that their daughter or sister would not be alone.

Bindu was one of the students who explicitly stated that she experienced restricted mobility because of time issues in the third AR

workshop.

"People in my neighborhoods asked different types of questions when they observed me coming late to the house in the evening. Sometimes it is frustrating and difficult to make them understand what type of training I am doing and why I am coming late" (ARW3).

When Bindu's neighbors started to observe that she was home late in the evenings, it made them curious as to why, and when she told them that she was taking Internet training, they wanted to know what type of training, why she was attending, and who else were there and why it took place after class. Exactly because of her neighbors skeptical questioning, Bindu always preferred training in the morning.

Students had restricted mobility because of time limitations concerning when they were expected home, and these findings are also reflected in the literature. For example that women enjoys less mobility in the Indian society (Vijayalakshmi & Bhavani, 2006), and also that women's restricted mobility is a barrier to use ICT especially in developing countries (Dimaggio et al., 2004; Hafkin, 2002; Huyer & Carr, 2002; Primo, 2003). The students' statements also validate that the place of access and distance from home are contributing factors which restrict their ICT usage, as indicated in the literature (Bimber, 2000; Huyer & Carr, 2002).

5.4 The Influence of the Gender of the Trainer

An important aspect of the socio-cultural factors which affected the research relates to gender. I had a presumption that my gender as a woman would be an advantage in training the women students. I therefore asked the students what difference it would have made if the trainer would have been a man. The main reason for these considerations was to clarify whether the gender element of the trainer needs to be considered if the project were to be replicated in other learning scenarios in India or elsewhere. Even though the literature identifies the need for women specific training undertaken by women trainers, a discussion of why this is the case seems to be missing in the literature. The findings in this research project will explore these unanswered issues and seek to give an understanding of the cultural barriers that may arise if the trainer were a man, in particular as regards giving training at a public Internet café, and how this may influence the effectiveness of the training. The major themes that emerged through group interview that was conducted in the third action research workshop were as follows:

5.4.1 Constrains in visiting Public Internet Cafés Unaccompanied

When asked whether they would go to an Internet café if the person giving the Internet training were a man, all students stated that they would prefer not to be alone with a male trainer, but if someone accompanied them, it would be acceptable.

Tahira explained: *"maybe I'd go if it was a male. But accompanied by friends. If I am alone I wouldn't go at all" (ARW3).*

Reshma also reflected along the same line: *"No. I wouldn't come if I was asked to come alone…but if friends are there I had come" (ARW3).*

For Tahira and Reshma going to Internet training with a male trainer is only possible if they were accompanied by their friends, and if the situation were that they had to go alone, they would not come.

Anuradha: *"If I am alone, you don't know if his behavior is good, I wouldn't come" (ARW3).*

Anuradha also stated that she would not come alone at all if it were a male instructor or trainer; she also added that the reason was that she could not know the character of the person and whether he would behave inappropriately.

Bindu confirmed this view: *"If I were alone, I wouldn't come at all" (ARW3).*

Bindu was shy and reserved and going alone to a public Internet café with a male trainer was something which she would not consider at all.

Hima stated, *"I will not go if it were male instructor and if I was asked to go alone. I have four brothers! I would have gone with friends… if it is with friends I'd go" (ARW3).*

Hima's reflections also indirectly indicate the patriarchal structure that is pertinent in the cultural context of the research. She humorously said that she has four brothers, which in an indirect way means that since she has not one but four brothers, all their decisions influence her mobility.

Deepa said, *"Even if it were two people together I would not go if it were a male. Most of the time sessions are after class hours… Even if*

I explain it at home they won't allow me. I have two brothers at home. I know they won't allow…if it was my life, I might have gone" (ARW3).

Patriarchal structures influencing their life decisions also arose as a factor in Deepa's statements when declining to attend unless she was accompanied by others. Nevertheless, she added that if the decision making were in her hands, she would attend.

The fact that the students want to be accompanied by someone reflects the issue that it is not culturally appropriate to go to an Internet café alone, especially to meet a man; they would run the risk of being looked upon with suspicious eyes, and people might question their moral. Even though men and women mix and interact without inhibitions in their culture, the Indian society is basically conservative, and there are some implicit cultural norms which influence the interactions between a man and a woman.

5.4.2 Comfort Level

The students' reflections indicate that their comfort level would definitely be affected if the training were given by a male instructor, so the training undertaken at an Internet café as organized and conducted in the research, could not have occurred with a male researcher.

Bindu explained, *"When we are sitting in a café ... if our hands accidentally touched, maybe I'll think has he done so deliberately? I will not concentrate on what he is teaching. Our thoughts will get diverted on what his intentions are. . . When we are sitting inside the café, since it is you its okay… but when it's a male it will be uncomfortable… maybe they won't have a problem…but for me… because there is no enough space" (ARW3).*

Bindu's statement reflects small intricate issues that are not explicitly stated in the literature. What Bindu touches upon is also a significant element, which will affect the learning of women participants when training is given by a male trainer. She states that her concentration will be diverted if the male trainer accidentally touches her hand by making her consider whether he has done so deliberately. She also reflected on the limited space that would make her uneasy if it were a male trainer; that is also an important factor to be taken into account when deciding on the location of the training. What Bindu means when she says that the limited space was okay with her because I was the trainer, implying a woman, also shows why women trainers should be considered in giving training in ICT for women participants in a developing context.

Soumya also expressed that if it were a male researcher she would be conscious: *"yes, we might feel conscious of where he looks and all…that's there, if there are no major issues or bad experiences from his side…we can adjust and learn …see it's like… as Deepa said, I will also think twice when he is holding the mouse" (ARW3).*

Soumya actually sees it as a learning opportunity, and she would give a try and would not hesitate to go. Another important cultural factor that Soumya reflected on concerned the gaze of the trainer that might make her uncomfortable. Soumya also stated the same cultural factor as Bindu and Deepa concerning a male trainer's intentions.

Saritha said that *"maybe we won't be able to concentrate also…. we might be concerned about how we are sitting and all, as cafés has small space I won't be comfortable" (ARW3).*

Saritha's reflection also shows how women participants' learning skills can be affected when they are given training to use the Internet by a male trainer. She also reflected, similar to Bindu, that with a male trainer she might not be able to concentrate properly as she will be concerned how she sits, indicating the posture. Saritha also reflected, similar to Bindu, on the how the small spaces in the Internet café would make her uneasy if she had to sit there with a male trainer. Most Internet cafés in India are usually designed as small cubicles resulting in congested spaces, and sitting with an unknown male in a congested place can definitely make the women from this culture uncomfortable.

5.4.3 Constrained Communication

Another theme that emerged concerned the limitations in expressing doubts when the gender of the trainer is male. Some of the students felt that there would be a limitation in clarifying doubts while learning to use Internet if the trainer was male.

Jasna reflected that the gender of the trainer would have influenced how much knowledge she would gain through the training: *"when it is a male there will be a limitation on what we ask. We have done workshops and training and I feel we would not have come this much and the knowledge which we would gain would be low when it is a man."(ARW3).*

Soumya also reflected on the limitations in the communication that would affect the knowledge level if the researcher or trainer were male. *"When you are teaching …we will ask and learn. If this is the correct way to do or not…but if it is a male, there will be a gap in communication. This may lead to less effectiveness when a male*

teacher teaches" (ARW3).

Tahira said that there would be a limitation in the interactions if it were a male trainer or researcher: *"there will be limitations…our interactions will be limited" (ARW3).*

Saritha also reflected on the limitations in clearing doubts and communication: *"like even expressing doubts… also we will not ask like how we ask you" (ARW3).*

Deepa also echoed this issue: *"we won't call him as freely to ask questions or express doubts"(ARW3).*

Thus, the students' statements above reflect that constrained communication and their limitations to often call to clear doubts if the trainer were male can negatively affecting the learning. The literature states that when learning to use computers, women may find it uneasy if a man is in charge of the training even in countries where women and men mix freely (Primo, 2003). This point can be extended to when it is training for learning to use the Internet, as seen in this research context. The reason identified is again because of the gendered role definitions being women in this specific culture.

There are specific cultural norms of behavior expected from women and men, and this influences the interaction when the trainer is male in an Indian context because the society is predominantly conservative, as mentioned earlier. The reason why the students state that they may not raise doubts if it were a male trainer rather than a women trainer is because women generally are cautious when they interact with men in this culture and keep a comfortable distance with men whom they do not know well. They might feel discomfort when they have to call a male trainer. This will indirectly affect how they express doubts and ask questions and that will in turn affect their learning skills.

5.4.4 Additional Time Restrictions

Mobility and time constraints also arose as an issue when they were asked about the difference between a male and women researcher. The timing of the workshops and training was a major concern for most of the students if the trainer was male. They said they would sit for the training within stipulated time periods.

Bindu: *"They won't allow me ... in spite of you giving the training ... I will not stay beyond 16:30 because I'll miss the bus ... and it will get delayed by the time I reach home ... and coming to the fact that it's a*

male instructor, they won't allow me at all" (ARW3).

Bindu reflected on the issue of time and said that time was a problem for her even when the researcher was a woman.

Lakshmi confirmed this issue: *"maybe I can stay till 17:30." She also reflected that even if her parents would allow her, they would be concerned about the time: "they might allow…but will ask…till what time it is going to be?" (ARW3).*

Tahira echoed the same concern: *"even for me… they won't say no outright…they will also ask how many other students are there… about the time"(ARW3).*

Bindu, Lakhsmi and Tahira were day scholars who lived at home with their parents, and their time restrictions reflect that they are expected to be home before dark. Staying for training beyond a certain time in the evening was also an issue for Deepa, Saritha, and Soumya, who were hostelers and lived away from their parents, if the training was given by a male trainer, which also shows their life decisions are influenced by their parents even if they do not live together.

Deepa reflected that even if her parents allowed her to take the course with a male trainer, the timing of the classes would be a problem: *"Maybe they will allow. Again time will be a issue" (ARW3).*

For Saritha, time was also a problem, even though she appeared to be more outgoing and not a particularly reserved person, *"time is a big problem… because if it's late, like every girl I am also concerned"(ARW3).*

Similarly for Soumya, time was an issue: *"time is a problem… I won't mind if it's till 17:00 to 17:30"(ARW3).*

It was observed that most of the students consider 17: 30 as the latest that they can stay for the training if it was male researcher. Time was also an issue in this research context; day scholars, who had to take a bus to get home, preferred to stay no later than 18:00 and the hostelers preferred to stay no later than 18:30. So the difference was not great, but still almost everyone said 17:30 as the latest that they could stay. This restriction of the timing is attributed to the fact that in India the sunset is usually between 18:00 and 19:00 in the evening throughout the year. Visiting the public centers in the evening is not safe as they would have to return home in the dark (Hafkin, 2002); so even the hostelers wanted to be back in their hostel before it was dark.

The students and their families' concern, which results in constrained time in the evenings, arises because of the cultural perceptions that Internet cafés are not a safe place for a girl or woman to visit in the evenings, also accompanied by a male. Rangaswamy's (2009) study on Internet cafés in the city of Mumbai in India showed that the number of women visiting the cafés declined in the afternoon hours and the cafés become predominantly a "male space". In another study done by Johnson (2010) on women's Internet use in the city of Chennai in India also showed that going to Internet cafés at odd hours of the night is considered culturally inappropriate in small towns and remote villages in India, and that women users preferred to visit Internet cafés in the afternoon as there will be fewer men.

These reflections by the women students in this research context is in line with what is stated in the literature; for women's successful usage of ICT and Internet, training needs to be gender sensitive and should encourage woman trainers (Best & Maier, 2007; Melhem et al., 2009; UN, 2005a; World Bank, 2003); because women find it more comfortable with women trainers and can participate more effectively in women-only training environments (Jorge, 2000, 2002). The finding from the research reveals the intricate, but highly relevant factors, which may be constraints when training for learning to use Internet is given by a trainer or instructor who is male. These factors identified are specific to the culture and necessarily has to be considered by the designers of a project. Even though the students in this research were doing their master's program at a university level, they were influenced by the culturally specific gendered roles, and these factors can come as a barrier for learning to use the Internet when a male trainer or researcher gives the training. This research takes the position that ICT based projects intended for women are be more effective and successful with women trainers or instructors giving Internet training or other ICT based tools.

5.5 Summary

The overall aim of the chapter was to explore the barriers that kept the women students in the research context away from the Internet. I identified barriers due to first order effects in the form of infrastructural barriers such as lack of ownership of computers and Internet connection. It was observed that, apart from two students, no other students had Internet access at home. Other infrastructural barriers identified were also in the form of limited access facilities provided by the university, slow connection speed and cost of access.

There were also factors arising because of second order divide that were beyond the connectivity issues. Students lacked the skills and knowledge to use the Internet, and technophobia was another barrier that affected their learning skills in learning to use the Internet. Second order divide was also due to socio-cultural factors arising out of the patriarchal structure and gendered role definitions that delimited their access of public Internet cafés, which affected their proficiency to use the Internet. The cultural norms brought second order divide in the form of restricted mobility, which meant that they were expected to be home before dark and that influenced their use of public Internet cafés after their classes in the afternoon.

The findings through the research validate what is stated in the literature that women's access to Internet and other ICTs is not limited to the infrastructural or physical barriers but is also attributed to the socio-cultural factors that inhibit their use of technology (Hafkin, 2002; Huyer & Carr, 2002; Melhem et al., 2009; Primo, 2003; UN, 2005a; Wangmo et al., 2004). This finding also reinstates what is stated in the literature on India that even though the constitution grants equal rights to both men and women, strong patriarchal traditions persist and this influences a women's mobility, capacity to make decisions and gives rise to gender related constraints (Vijayalakshmi & Bhavani, 2006); moreover, gender stereotypes very much permeate the Indian society (Johnson, 2010). All these factors have a significant influence on how women in an Indian context use the Internet.

Moreover, the chapter has also provided insights on how the gender of the trainer influences the effectiveness of learning to use Internet in an ICT4D context. Even though the need for women specific training and women trainers are indicated in the literature, the need for a woman trainer or what the cultural specific factors are which can result in learning an ICT tool being ineffective if the training is done by a man are unexplored issues in the literature to the best of my knowledge. The reflections by the students which illustrate the barriers for learning to use Internet if the training is given by a man, is missing in the literature. It can give new insights on what considerations should be kept in mind when designing training for Internet usage aimed at women users in an Indian context and also in the context of other developing countries.

In the next chapter, I will discuss the process of empowerment experienced by the students through the intervention. Constructing identities by learning to use Internet through the ICT intervention, is in this research viewed as an empowering process and this is discussed with the theoretical underpinning of Wenger's social learning theory.

CHAPTER 6

Analysis & Findings: The Empowering Process - Constructing Identity through Learning

This chapter talks about how the process of empowerment, which for in the context of the research is conceptualized as the constructing of identities through learning the Internet, can help students to improve their life choices and become more efficient.

The aim of this chapter is to:

- Give an account of how the student group is identifiable as a Community of Practice (CoP).
- Analyze and discuss the data from the empirical studies in order to describe how identity in the research context is explained and understood through Wenger's social theory of learning, where "learning is seen as becoming," and how the process of empowerment is perceived as the changing of identity through learning the Internet whereby students identify themselves as users in relation to the Internet or the World Wide Web.

6.1 Constructing Identity as an Empowering Process

My research interest is in empowering students by training them to use the Internet. As discussed in chapter 2 ("Theoretical Framework"), the empowerment happening for the students through using the Internet is viewed both as a process as well as an outcome. In this chapter, I will be discussing how the process of empowerment happening for women students is conceptualized in the research.

As stated in chapter 2, the empowering process for the students was constructing identities through learning to use the Internet through training and workshops which consist of activities, opportunities, and experiences given to the students that influence their decisions about using the Internet that affect their lives. Through these opportunities, they gain a sense of control over their lives once they learn to use and take advantage of the Internet. Knowing how to access to the Internet improves their ability to be well-informed, and thus it improves their quality of life and, at the same time, helps them develop a sense of belonging to the Internet.

Thus, the process of empowerment for the students is constructing their identities through learning to use the Internet, and this happens through sharing knowledge and experiences within the group about their Internet-usage experiences. When students develop identities through learning to use the Internet, they realize the value of the Internet and come to see what a difference the Internet make in their

lives. This process of building identity also makes them aware of what they had been missing out on by not being an Internet user. This is in line with Van Uden-Kraan et al.'s (2008) study, where two of the variables identified to describe the process of how the participants got empowered were exchanging information and sharing experiences.

The identity that the students construct through learning to use the Internet is not a stagnant position or a state of mind that is to be attained; it is dynamic. The process of "becoming an Internet user" through learning will change with time. The more they use the Internet in the future the further their identities and the ways they relate to the Internet will also change. Thus, empowerment through constructing identities by learning to use the Internet, for the students, is seen as a process that is dynamic and one that evolves over time.

Figure 6.1 shows how "learning as becoming" is conceptualized as the empowering process which is dynamic that evolves over time.

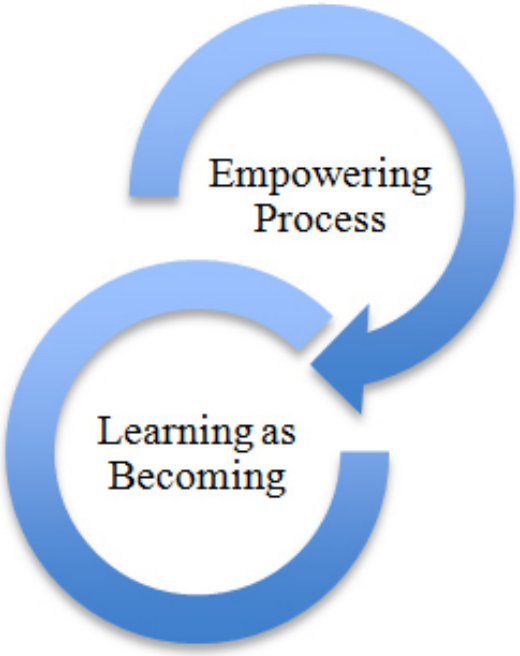

Figure 6.1. *"Learning as becoming" conceptualized as the empowering process*

I will explain how the students experience this process of empowerment through constructing identities of becoming an Internet user. Students' reflections on how they experience the change and how they construct identities are explained with the help of Wenger's social theory of learning and the concept of learning in communities of practice (CoP) (Wenger, 1998), to facilitate an understanding of how students construct identities through learning to use the Internet.

6.2 Student Group as a CoP

My aim through the research was not to make the women students empowered by making them Internet experts. What I am arguing is that empowerment is not simply experienced by gaining knowledge and skills, but, equally important, is the sociocultural aspects that influenced the students' learning, which in turn influenced their identity through learning to use the Internet. Their empowerment was about their changing the way they see themselves as Internet users and realizing the value that their new skills can add to their lives.

To address the sociocultural aspect of learning, I have found it useful to use Wenger's social theory of learning and the concept of learning in CoPs. First, I will discuss why the students in the research context can be called a CoP. In addition, second, I will describe how identities are constructed in relation to the imagined community of the Internet, which I explain through a discussion of the analytical components of identity.

In the research context, the study group was comprised of students who volunteered to learn to use the Internet. As such it is identifiable as a CoP, as it fits the definition of a CoP stated by Wenger (2006): "communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor – it could be a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a network of surgeons exploring novel techniques, a gathering of first-time managers helping each other cope" (p. 1).

In the group, there was joint problem-solving and requests for information, as well as seeking of shared experience by the students – which are some of the examples of activities within a group which makes it identifiable as a CoP (Wenger, 2006). The group was also characterized by three components, which are vital, according to Wenger, to constitute a CoP: the domain of interest that creates a

common ground and a sense of identity; the community where the members engage in joint activities and discussions; and the practice where they develop a shared repertoire of resources in the form of experience, stories, tools, and ways of addressing problems (Wenger, McDermott, & Snyder, 2002; Wenger, 2006).

The domain of interest, or the topic, that the students focused on was learning to use the Internet to become an Internet user. For the students, it was about discovering how they could use the Internet skills to support and improve their academic activities; how they could be well-informed; and also how they could use the Internet for every aspect of their lives, even after they leave the university. The group formed can be considered as a community, as they were coming together so that they could learn how to use the Internet through joint activities such as performing web-based searches, shared learning task, and also discussing and sharing how they had performed their web searches. The students discussed with others in the group about what went wrong and what they found to be the best possible ways to use the Internet, and thus helped each other learn. This way the group provided the students with the social fabric of learning, as stated by (Wenger et al., 2002). The practice that Wenger calls the shared repertoire of resources in this study is in the form of the action research model for reflective Internet searching (Edwards & Bruce, 2002), which was used as a model for the Internet search and reflecting on the search. Sticky notes were used as a tool for knowledge sharing within the group, along with participant-produced drawings. Drawing was used as a means for explaining the problems students encountered in using the Internet; drawing allowed for visualizations and also for depicting how students experienced empowerment through their Internet use. These tools facilitated the development and sharing of knowledge within the group.

The student group that formed around the research for learning how to use the Internet was not formed organically; it was self defined. Even though Wenger (1998) noted that one of the fundamental features of CoP is that it has to be emergent and voluntary, his later work with McDermott and Snyder is mainly about how to design or cultivate a CoP (Wenger et al., 2002). In the 2002 study, the authors state that even though CoP develops naturally, a design can provide fundamentals that can enable a community to evolve. However they clearly state that the design in the traditional sense cannot be structured or implemented and imposed, but, rather, the design should provide elements that bring out a community's own internal direction, character, and energy (Wenger et al., 2002).

Following Thompson (2005), the student group in this research could be defined as an indirectly seeded CoP (Thompson, 2005). The CoP was shaped indirectly, not in a prescriptive manner. The group was provided with the structural and epistemic components to give scope for interactions and engagement (Thompson, 2005), which turned out to support the development of the group as a CoP. In this research, these structural components were the Internet training sessions, Action Research (AR) workshops, the Future workshop, and the tools in the form of action research models for reflective Internet searching, participant-produced drawings, and sticky notes as discussed earlier. These are the structural components around which the students should interact. Even though these structural components provided students with the scope to interact and to learn, it turned out that just providing the structure was not sufficient. The students also needed to be persuaded to interact with each others in the structure. From the beginning, based on the informal interactions, my expectations were that the students would be shy and would not be used to interacting and sharing. The epistemic components provided were an informal atmosphere and motivation and encouragement toward interaction, to get students' to reflect, share, and learn from each other's experiences. My role as a researcher in building the CoP was to give an outside perspective to help group members see the possibilities and what they could achieve (Wenger et al., 2002).

Figure 6.2 below shows the structural and epistemic components which were provided in the research for the community to function and to facilitate learning.

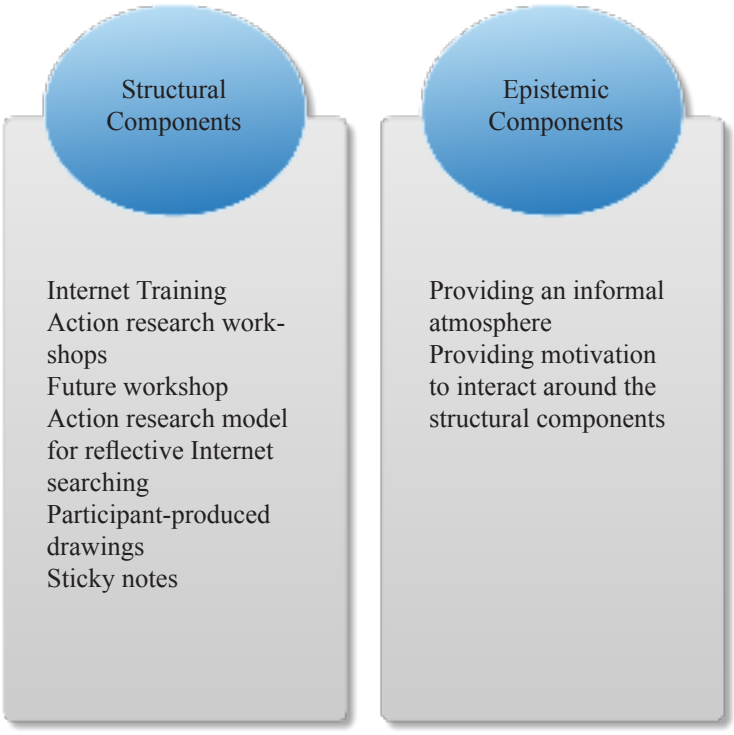

Figure 6.2. *Structural and epistemic components provided through the research*

Thomson (2005) also talks about the "virtuous circles" particular to a CoP. He argues that there should be an identifiable virtuous circle within a CoP. The virtuous circle is characterized such that the more the people participate, the more they learn. In the context of this research, the more the students participated in online activities, the more they learned: the more they could identify with the world of the web and become more motivated to participate in being a member of the world of the web or the Internet. The research showed that as the Internet training progressed and the students could start to get a hold of the Internet they started to show more interest in the learning activities, and they started to identify themselves as belonging to the world of the Internet, which improved their motivation to use the Internet. How this emerged has been documented and discussed in more detail in chapter 4. Thus, the intervention done in the form of training and AR workshops facilitated in forming of a virtuous circle.

Figure 6.3 shows the virtuous circle that has been identified with the group.

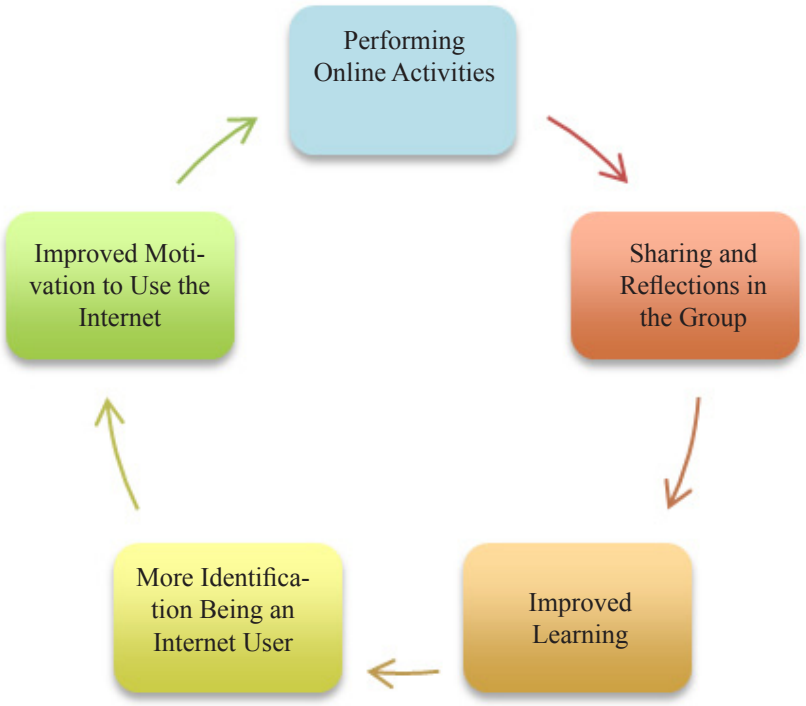

Figure 6.3. *"Virtuous Circle" identified in the group*

Even though the students were coming together to learn to use the Internet for only three and half months, there was sufficient mutual engagement between the students and informal shared learning happening as a group, which is explained in chapter 4. The reflections of the students which support mutual engagement happening will be discussed further in this chapter under the heading engagement and characteristics of identity. Thus I would argue that the group characterized the essence of a CoP – "that through joint engagement in some activity, an identified group of people come to develop and share practices" (Wenger, 2006, p. 5). For Wenger, it is not the duration of time which matters, as there might be some short-lived communities, but what is important is that there should be significant mutual engagement in pursuing an enterprise to share some significant learning (Wenger, 1998, p. 86), and the size of the community does not matter (Wenger et al., 2002).

6.3 "Learning as Becoming" in an Imagined Community

To understand how the empowerment process is about constructing identities through learning to use the Internet, data was analyzed with reference to the notion of participants' identification with the community of World Wide Web. The research does not focus on exploring the internal dynamics that happen within the CoP, but it investigates how learning happens through negotiating identities through engagement and shared learning for the students.

According to the social learning theory of CoP, learning is not just an accumulation of skills and information, but a process of becoming. Wenger asserts that since learning transforms who we are and what we can do, it is an experience of identity. What was particularly significant for me in the research was that this formation of the identity of the person through learning, according to this social learning theory, "addresses the issues of gender, class, ethnicity, age, and other forms of categorization" (Wenger, 1998, p. 13). This was what I focused on – how learning to use the Internet and constructing identities through learning is influenced by the social and cultural structures of being a woman in a developing context.

What I wanted to understand was how the students identify themselves as being Internet users through mutual engagement and shared learning to the wider or the bigger CoP, the web, and not specific to how they see themselves as users with relation to the student group. The web for the students in the research can be defined as the imagined community (Kanno & Norton, 2003; Norton, 2001; Rossetto, 2006). An imagined community is not immediately tangible and accessible, but it can be accessed through the power of the imagination (Kanno & Norton, 2003). Such a community includes relationships that exist only in the learners' imaginations, as well as the affiliations that extend beyond the local set of relationships, and the authors argue that these communities are no less real that the ones in which learners have direct engagement. In this research context, the students, through direct engagement and shared learning about using the Internet with other students in the group, are identifying how they belong to the world of the Internet, which is not tangible. I will be giving examples based on students' reflections on how they construct identities by developing a sense of belonging to the World Wide Web in the section on the analytical components of identity.

The notion of the Internet as an imagined community is very significant in the research, considering the fact that what the students were learning was a lifelong skill that has wider implications in

their life, and was not just confined to the immediate group that they belonged to. What the students experience in the research is similar to the experience of two adult learners in a study conducted to investigate the relationship between identity and language learning by Norton (2001), where it was found that even though the learners were engaged in classroom practices, the communities of practice, which characterized the adult learners' learning trajectories, were the communities that they imagined extended to the world outside of the classroom.

The students were thus having direct engagement though learning and sharing their experiences of performing various Internet activities and learning online task. However, the community that they identify themselves with is an imagined community (the web) that they do have access to, and the nonparticipation in this imagined community was due to a lack of ability to access the Internet and sociocultural factors associated with of gender-role definitions, which are identified in chapter 5.

Norton (2001) claims, in his study on identity and language learning, that the learners investment in the language is on the expectation of having a good return, which is in the form of access to the privileges in the imagined community. Rossetto (2006) claims in his study to find out how preservice teachers visualized, idealized, and actual participation in school communities is influenced by the educational and professional possibilities found in imagined communities. Similarly, for the students in this research, this imagined community of the Internet opens up a plethora of opportunities, and to what extent they are applying their effort to learn to use the Internet is based on how they construct their identities and develop a sense of belonging to the World Wide Web. Through this sense of belonging to the world of the Internet, they perceive themselves as Internet users as they feel that this opportunity is important, and this sense of belonging will influence their future usage after they leave the group as well as after they finish their studies and leave the university.

Therefore, the focus is on finding how the students visualize themselves and how their identities are shaped by the experiences of gaining competence and skills in using Internet as well as through being aware of any lack of competence in using the Internet and how they might work toward improving to become a member of the world of the Internet, through the shared reflection process in the AR workshops as well as what they learn through engagement and sharing experiences with each other in the training sessions.

Data that are discussed in the chapter was mainly collected through student's responses to group and informal interviews, participant observation. Moreover, taking into account the unstructured underpinning of a CoP, the informal and group interviews helped me to get some highly candid statements from the students. The questions in the interview that were asked did not have any direct questions related to exploring the internal dynamics of CoP, as it was not an existing CoP. However, I did ask direct questions in the informal interview, which was conducted one and half years after the intervention was completed. Analysis was done through the theoretical lens of identity by Wenger, and students' statements were looked into, to see how they perceived any change or transition through learning to use the Internet. The data analysis on identity aspects influenced by learning was guided by the question: In what ways does learning to use the Internet create identities for the students, based on the analytical components of identity.

To understand how identity is formed through learning, it is essential to take into consideration three modes of belonging: engagement, imagination, and alignment. Wenger (1998) states that "a community can be constituted by all three, in various proportions, and the variety of these combinations results in communities with distinct qualities" (p. 182).

6.3.1 Engagement

Engagement, from a belonging perspective, is the ability to take part in meaningful activities and interactions (Wenger, 1998). Wenger claims, "In order to support learning, engagement requires authentic access to participative aspects (access to and interaction with other participants) and reificative aspects of the practice (access to symbols, tools, language, documents, etc.) in concert." This dual access to participation and reification makes engagement a special context for learning and identity, and a lack of access to either, results in an inability to learn (Wenger, 1998). Thus to support engagement both structural and epistemic components are necessary.

The training course and the AR model provided a platform for both participation and reification. The training course provided a space for the students to engage in the acquisition of various aspects of Internet use and engagement in the wider Internet community, whereas the AR model facilitated the students to discuss experiences and negotiate meaning, and through this process to reificate the meaning of their Internet training. This is similar to what is found in the study by Goodnough (2010), where AR is used to facilitate engagement and

to negotiate meaning to examine the three modes of belonging to understand teachers' identity.

Further, I will argue that the tools used can be understood from the dual perspective of participation and reification. The word documents, power point presentations, and mind maps created by the students all constitute reificative tools in the context of this research, which displayed reificative elements of making and designing from what they learned in the group. Sticky notes and participant-produced drawings could be considered as the tools that represented the reificative aspects of describing, perceiving, and interpreting.

Using sticky notes gives the students a possibility to express their opinions and ideas, at the same time as it reificates the expressions of the student. Sticky notes were deployed to facilitate engagement, as some of the students were shy and not verbally expressive; however, they turned out to be a useful tool to get all of the students to express their ideas. Drawing as an artifact was also a reificative tool that helped the students to express their experiences and participate and contribute to the community through other means.

Figure 6.4 shows how students in these small groups discussed the problems they faced in learning to use the Internet, and where they reflected and found solutions for these problems, were later depicted in the form of drawings.

Figure 6.4. *Students using drawings as a reification tool*

The process enabled them to create individual ownership of the problems faced and to learn from each other about what problems others faced. Moreover, they were able to find solutions together, and thus the process created a balance between working alone and reification through groups in the form of drawings.

The individual groups shared their experiences with the whole class; they discussed within the group about the problems they faced and how they found solutions. Thus, the research facilitated an element of mutuality of engagement that was enabled by interactivity and shared learning tasks.

Figure 6.5 shows one of drawings created by a group depicting the problems doing the Internet activities and solutions identified within the group through discussions.

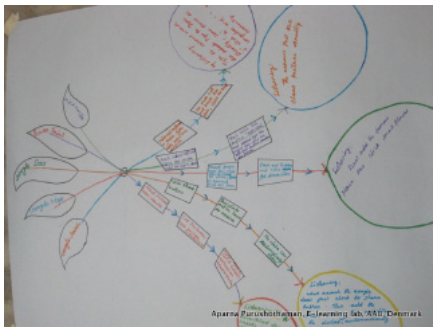

Figure 6.5. *Drawing created by a group depicting the problems and solutions in Internet search.*

Thus, students were thus given authentic access to both participative and reificative aspects, which provided them a context for learning and identity forming. There was sufficient mutual engagement, which was identified as the students were taking part in meaningful activities and interactions, in the production of shareable artifacts, in community–building conversations, and in the negotiation of new situations, following the recommendations of Wenger (1998). The research did provide a balance between participation and reification, as in there was not too much emphasis given to the technical aspects of learning to use the Internet, both in the Internet training and AR workshops. For example, focusing too much on the technical parameters of Bloom's Digital Taxonomy could have made the students disengage from the learning process, as most of them were novice users. The Internet training was based on the Blooms digital taxonomy, where they were introduced to the Internet tools and applications. Using AR as a methodology provided the scope for the participants to share, reflect, and learn from each other, where the focus was more on the conceptual and reflective skills in using the Internet, thus giving different forms of participation. Students were provided with the scope of engagement through which they were given opportunities to share histories of what they had done and where they had been in terms of Internet usage and in the scope of using different reificative tools.

6.3.2 Imagination

Wenger (1998) states, "The concept of imagination refers to a process of expanding our self by transcending our time and space and creating new images of the world and ourselves. Imagination in this sense is looking at an apple seed and seeing a tree" (p. 176). This mode of belonging was facilitated in the research through encouraging the students to imagine alternative scenarios and solutions to the problems, which they faced in using the Internet. It was about imagining an ideal situation that they saw could make them an Internet user. For me this is important in terms of understanding how they want to see themselves

or identifying the scenarios that they feel can make them a better Internet user.

Since imagination is a key element for understanding nonparticipation (Norton, 2001), the notion of imagination helped in getting insights on why the students did not participate in the world of the Internet before joining the group. Through imagination, we can include in our identities, other meanings, possibilities, and other perspectives. According to Wenger (1998), imagination requires some degree of playfulness, and opportunities for playfulness were provided, as students were encouraged to think and fantasize their own thoughts. Providing modes of belonging associated with imagination thus provided insights on novel situations of using the Internet for the students' from their own perspectives.

This imagination process was facilitated through a fantasy phase in the Future workshop (Refer chapter 4). Students were told that instead of putting their thoughts and fantasies in words, it was good to share them through drawing from their imaginations. This finding is in line with the findings of Wenger (1998), who says that the process of imagination requires reification tools like maps, visualization stories, and simulations. As discussed in the chapter 4, drawings as artifacts facilitate the process of imagination because the cognitive process the participants use when they are asked to draw is different from that when they are asked to verbalize their thoughts and experiences (Kearney & Hyle, 2004). The open-ended nature of drawing provides a wide range of possibilities and also aids the participants in getting the most salient idea or perception (Bishop, 2006; Nossiter & Biberman, 1990). The analysis of the drawings was based on the participants' interpretation of the meanings of the drawings (Guillemin, 2004). Thus, the meaning of being an Internet user was revealed through their imagination and the interpretation of the drawings.

Drawings Produced by Group 1 :

Figure 6.6 shows how group one used a computer system as a metaphor for depicting their imagination. They gave meaning to power connection, CPU, keyboard, mouse, and screen of a computer, which was very brilliant.

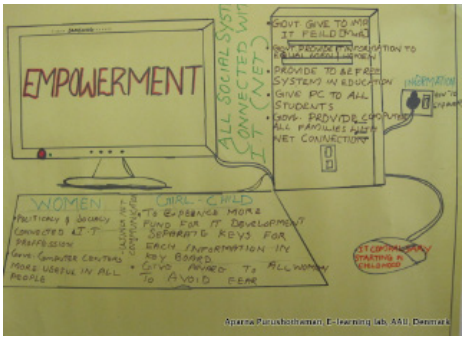

Figure 6.6. *Drawings produced by group one portraying imagination.*

They visualized being empowered through information, and this was portrayed as the power connection, which means that power is needed for the free flow of information, through which they also signified the elements of power failures in developing countries.

A computer mouse was visualized as compulsory IT training starting from childhood. By imagining compulsory training in IT from the earlier school days, they traveled to the past. They wanted the changes to have been made at an earlier stage of their childhood, which would have had influences on their Internet usage. The CPU of the computer was represented mainly as the measures to be taken by the government to enable better Internet usage; for example, they thought that the government should give importance to the field of IT. Students imagined that the government should provide free Internet access for the educational institutions, PCs for the students and free computers and Internet connection for families, which would indirectly influence their Internet usage. Their visualization also included the belief that the social system should be connected through the Internet, which would include the computerization of all public services, which would then be accessible through the Internet, which they depicted through the wires that connect the CPU with the computer screen.

As Wenger (1998) stated, imagination helps people to see their own practices as continuing practices that reach far into the past, and it can help to visualize and explore novel developments, alternatives, and future opportunities. In the students' drawings, the keyboard represents this element of imagination which is shown as gender issues.

Their imagination was related to one of the psychological factors that affect women's use of the Internet, which is the fear of using the

Internet or technophobia. Their imagination to overcome this difficulty was mainly through gaining more experience using the Internet. They felt that this experience could be gained by improving their Internet usage, which could be made possible if the government increased the number of computer centers. They also imagined that the government should provide more information and awareness to women to deal with the issues of avoidance of computers and the Internet. The students also showed each key on the keyboard representing a different type of information, which supports Wenger's argument that "imagination does include fantasies" (1998, p. 177). Finally, all the favorable and supportive factors through which their Internet usage could be improved were shown as the process to empowerment, which was depicted in the form of a computer screen.

Drawing Produced by Group 2:

The students in Group 2 used a tree as a metaphor, including the supporting factors that facilitate the growth of trees such as soil, showers, and sun to portray their imagination. Figure 6.7 shows drawings produced by group 2.

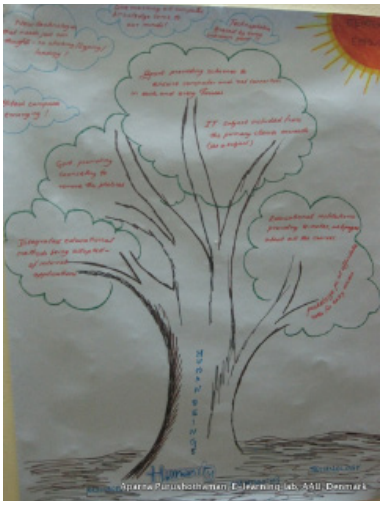

Figure 6.7. *Drawings produced by group two portraying imagination.*

Trees represented humanity, which was a representation of the students themselves. The students' development was based on the resources available in the form of education and opportunities to use technology, which they portrayed as the soil in which the tree was growing, and is kind of a fundamental factor needed to make a student efficient.

Their imagination also included like the first group that the government should provide schemes to ensure computer and Internet connection at every home. They also imagined that IT subjects should be included from primary classes which was also alike the first groups imagination of free IT training starting from childhood. The students also imagined the emergence of high-tech campuses, which they visualized as a rain shower. High-tech campuses are already in India, however for the students to be part of these campuses are a distant reality because those are targeted for the rich and affluent sections of the society. For these students imagination of high-tech campuses

was something that did not involve cost. They imagined educational institutions providing e-notes and web pages being provided for all courses and pocket size PC's which were affordable to them so that they could access Internet easily.

In their drawing, a rain shower symbolizes technophobia being erased by some unknown power; for the students in this group, and similar to the first group, one of the reasons for the nonparticipation in the imagined community, the world of the Internet, was technophobia or fear of using technology. They fantasized that their technophobia could be erased by some unknown power, and one morning all the computer knowledge comes into them. Imagination also involved the role played the government to provide some sort of counseling to remove the fear similarly identified by the first group.

Their imaginative ideas in the drawings of the rain shower also included how one morning all the computer knowledge comes to their minds, and that new technologies need just our thoughts – no clicking, typing, and downloading, which shows that imagination can sometimes be disconnected and ineffective, as stated by Wenger (1998). However, even though these ideas, which are portrayed through drawings, are wild ideas that seem to be disconnected and ineffective, they could be possible in the future through technological advancements and, therefore, should not be overlooked – so in a way, how they imagine the future Internet usage is significant too. Finally, the sun was depicted as kind of an umbrella representing "gender empowerment."

For the second group, their identities for becoming Internet users were also a root cause of the problems that got in the way of their Internet usage. What was found through the drawings is that, for the students, scenarios that affected their identities as being Internet users had wider implications. I could observe that their identities as being Internet users were largely influenced by the social and institutional setting that they were part of, which was reflected in the drawings similarly to Group 1. Thus as argued by Wenger (1998) for Group 2, their imagination also produced images of a world that transcends engagement: they were creating a picture which was not yet there.

Drawing Produced by Group 3:

Figure 6.8 shows how Group three created their drawing in the form of a person thinking. They visualized their possibilities through thought bubbles.

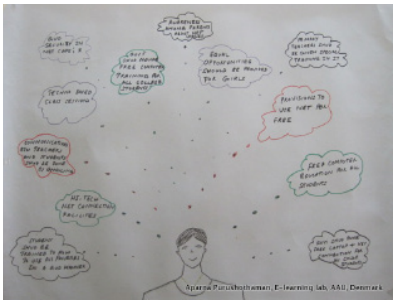

Figure 6.8. *Drawings produced by group three portraying imagination*

Group 3's imaginings were also more about the root cause of the problems identified, similar to Group 1 and Group 2. The students in the group threes imagination also included the primary teachers (which means teachers at the school level) being given IT training. They have learned basic computer skills in the high school level from their eighth grade to tenth grade. However this knowledge was not enough for them to be applied to access or use computers and Internet. Their imagination was that computer education should be included from primary classes and to achieve this, teachers should be given training.

For them awareness among parents also was one main aspect influencing the Internet usage which was not identified by group one or two. This is because if they wanted to buy a computer at home it was their parents who decided and also their visiting the public Internet cafés for those who cannot afford computers was also influenced by parental decisions even if they were twenty and twenty-one year olds.

They also imagined that free computer education and, free laptops and Internet connection would be provided by the government. Another aspect that was reflected was the element of gender. They imagined a scenario where equal opportunity is provided for Internet access for women, including good security in Internet cafés. Thus, students through these reflections stated what could be an ideal imagined community, where they could nurture their Internet usage. Students also imagined technology-based class session that would provide training for the students on how to use the facilities. They also imagined that communication between teachers and students could be done through e-mail. Imagination provides the scope for seeing ourselves in new ways (Wenger, 1998) Thus, through their imagining themselves as Internet users the students see themselves in new ways as students in the university context, in relation to how they study and how they communicate with the professors.

One important element that Group 3 imagined about the element of gender was providing good security in Internet cafés. Imagination generates scenarios and other possible worlds (Wenger, 1998). Thus, with their imaginations, students were generating a scenario where Internet cafés provide good security that ensures the safety of women, so that they would be able to visit and use public Internet cafés without a hassle.

Imagination as a mode of belonging for the students was thus about how they perceived themselves as internet users through the situations and conditions which they imagined would be ideal in terms of becoming a member of the world of the Internet, by exploring how they imagined themselves being an Internet user and a university student with the new competencies and resources. However, they also identified favorable situations that would be needed to support such an imagined community. Through this process, students were creating new images of the world and themselves (Wenger, 1998) by imagining how they wanted to see themselves as Internet users and how they could see that happening. This kind of imagination can bring out students' perceptions and images and thus can, on a broader level, contribute to making policy-level actions as well as micro-level plans and strategies for better usage of the Internet. In all three groups, students' expressions reflected how to connect to their previous experiences of being an Internet user and how they would like things to be in the future, exploring other possible worlds through imagination. Thus, what this activity also contributes to the wider ICT4D community is awareness on the perceptions students have about being an effective Internet user, which have psychological, social, and institutional policy implications that should be brought forward. Further, it shows that the students have many resources, which, under the right conditions, could be set free. In the course, they did not learn the details about how to become a strong Internet user; however, they got a space to work with their imagination to understand the possibilities of changing their lives that the Internet might bring to their practice.

6.3.3 Alignment

"Alignment" is about "becoming connected through the coordination of energies, actions, and practices to broader enterprises" (Wenger, 1998, p. 178). Alignment is an important aspect of belonging. Alignment is the process of learning the styles and discourse of a practice, for instance the scientific method, artistic genres, educational standards, or participating in the world of the Internet.

In the Future workshop, the fantasy phase provided the students

opportunities for broad visions and imagination, while the implementation phase allowed the students to align their visions and identify the problems to overcome in order to become full members of the new practice. One can dream about becoming an Internet user; however, if you cannot be aligned to the tradition of the community, (the world of the Internet), you cannot become a member of this community.

All the imaginations about becoming an Internet user that the students identified within the fantasy phase of the Future workshop could not be considered and taken into account in the implementation phase. This was partly because of priority issues. I found it important to learn about the students' imaginations. However, to develop further the concept of empowerment, facilitating alignment is also important to support the students' process of belonging.

The alignment processes was dealt with in the detailed training activities, where the students learned the styles and language of Internet use. Moreover, the alignment process was dealt with in the reflection phase on the psychological, institutional and cultural issues related to Internet use. However, it is fair to say that this was done in a more indirect way and not through systematic enquiries into these problem areas.

6.4 Components of Identity

In the research, the formation of the students' identity, or learning, as becoming an Internet user is described through the analytical components of identity established by Wenger, which have been discussed in the theoretical framework chapter. I will give an overview of the students' experiences on how they constructed identities through learning.

Figure 6.9 shows a pictorial conceptualization of Wenger's analytical components of identity (1998, p. 149)

Figure 6.9. *Analytical components of identity (Wenger,1998)*

6.4.1 Negotiated Experience

The first analytical component of identity is negotiated experience. For Wenger, identity emerges by a person's negotiating the self, and it is produced as a lived experience of participation in communities. What I have looked for in the data is to find out how the students experience and define who they are by participation in the imagined community of the world of the Internet.

In the group interviews in the fourth AR workshop, Tahira expressed her transition in the form of gaining the courage to go alone to an Internet café, which is an example of the transition at the psycho-social level:

"I have never gone alone to a public center [café]. I have not used the Internet alone . . . [I] was doubtful if I could. I had only little knowledge about the Internet, but still had a fear of using it and I felt confusion. Now that has changed. I have that confidence and my fear has reduced" (ARW4).

Tahira also reflected about her improved confidence in visiting an Internet café in an informal interview done in 2012:

"I do feel transformed and can feel a big change in myself being an Internet user and feel a sense of belonging to the digital world. Even though I have done a course before, the change in me, as an Internet user, was greater after I attended the workshops. A stage has come that, without computers and the Internet, I cannot do anything, now I can be a 'helper' to others also. My confidence has increased in using the Internet cafés, and now I use more" (SR12).

For Tahira, going to an Internet café alone was always a problem, because she felt that she could not go alone, and there was an element of fear that restricted her from going. Tahira was a student in the group who had taken a private computer class before. However, she was doubtful about her Internet-usage skills, which also made her apprehensive about visiting an Internet café. Her realization was not only about her improved knowledge and skills in using the Internet but also that it was as important to use the course to cross cultural boundaries, realizing how she is now fearless about visiting an Internet café. For Tahira, the experience of identity was not an object in and of itself, but it comprises the constant work of negotiating the self by her improved confidence in visiting an Internet café and how she also perceives herself as a "helper" to others, which she reflected one and half years after completing the workshops and training.

Similarly, for Hima, and Jasna, their identities in the community of the Internet were also negotiated experiences that involved their capability of visiting an Internet café.

Hima and Jasna reflected in the fourth AR workshop about how they see themselves gaining the courage to visit an Internet café.

Hima stated: *"Now I can search without much trouble . . . we had gone to the Internet café the other day to do Internet search" (ARW4).*

Jasna stated in the fourth AR workshop: *"A lot of improvement has happened . . . like going to an Internet café, I can search, I can make copies (printouts), I can do everything. Earlier, I did not know anything . . ."(ARW4).*

Jasna identifies that there has been an improvement in terms of the Internet usage, and she perceives that she can do everything on the Internet – the Internet competency, so to speak, more broadly strengthened her self-esteem. Also for Jasna, another significant

element through which identity was negotiated was by realizing her capability in visiting the Internet café, like Hima, who also identified herself as an Internet user through gaining courage to visit an Internet café.

Thus for Tahira, Jasna, and Hima the way they are defining their participation in the world of the Internet also includes their accomplishment of visiting an Internet café. It is not always culturally appropriate for women to visit Internet cafés in their social context. Moreover, their lack of knowledge and skills to use Internet added more to their hesitations to visit an Internet café. This is because Internet cafés are usually charged on an hourly basis. Their confidence levels and technophobia also restricted them from using, because they felt they might end up sitting in the café without getting the information and, in the process, lose their money. What is found here for Tahira, Jasna and Hima is that their identity of being an Internet user was also negotiated in the social context of their lived experience in terms of visiting an Internet café.

Mubeena reflected on her negotiated experience as follows in the fourth AR workshop:

"There are two other friends of mine. The three of us went to the computer course together before. One is studying law and the other one is married. Now I know more than they do. When I go home on weekends, I check if these two friends are at home, and if they are available, I visit their homes first. I discuss the Internet training and workshops with them. . . .We shared the Google docs, right? I told them about it, and they were like…oh you have learned everything"(ARW4).

For Mubeena the identity change that she experienced concerned knowing more than her friends and thus it changed her self-perception that she was inferior to her friends. This event jolted her experience of participation and brought into focus a negotiation of identity, which is reflected, in her final comment: "The biggest happiness is that I could feel superior in front of them."

Anuradha reflected in the fourth AR workshop as follows:

"I was a person who did not know anything . . . if I have reached somewhere it is because of these classes" (ARW4).

She also identified being an Internet user with realizing a sense of accomplishment in using the Internet in the informal interview done in 2012:

"Earlier I didn't know anything. I identify being an Internet user, because earlier I didn't know how to open a web page . . . now I can see myself as a part of the Internet world because I do feel I am able to go and take information from the Internet, which brings a sense of accomplishment" (SR12).

Reshma stated in the fourth AR workshop: *"Before I never knew anything, now I believe myself that I can do searching*" *(ARW4).*

In the informal interview in 2012, Reshma again reflected on this:

"Earlier I was a person who did not know anything about the Internet. Now, I definitely feel that I belong to the web world and I feel a change in identity as an Internet user, and more importantly, I do feel that I can do something" (SR12).

For Anuradha who had absolutely no Internet knowledge before she joined the group, her change of identity comes through the realization that, through learning to use the Internet, she has been able to reach "somewhere," as well as how she feels a "sense of accomplishment." For Reshma, her negotiated experience was the way she was defining herself by her belief in herself as an Internet user, and she still feels this way a year and a half after the workshops and training were conducted. Thus the experience of identify as a way of being in the world for Anuradha and Reshma were in the form of self-belief and the sense of achievement that came through the training and workshops.

What was found was that, for the students, their identity was developed through the process of participation. By recognizing a particular way of being and projecting who they are through their understanding, they have gained from their engagement through Internet usage. They identify themselves through using the Internet, which is a lived experience of participation in the imagined community of the Internet or web world based in very concrete actions, as well as through a feeling of self-worth they gained through the training and workshops. For some students, identity as a negotiated experience was also about the cultural boundary crossing, for example those that they crossed in visiting the Internet cafés.

6.4.2 Community Membership

Wenger states that membership in community constitutes our identity, not through reified markers of membership but more through the competence that it entails. Membership also makes them recognizable as a competent and it aids them in knowing how to engage with others.

Wenger (1998) states that membership in a CoP translates into an identity as a form of competence, through the familiar as well as the unfamiliar.

When in a community, members know that they are in familiar territory; it gives them the feeling that they can handle themselves completely. For students like Reshma, Deepa, and Saritha, it was about an experience that was displayed as an element of competence with regard to how they recognize their ability to use the Internet, as their identification is with respect to the imagined community of the Internet.

In the second AR workshop, Reshma shared an experience where she displayed her competence, as follows:

"Earlier I had read five books for presenting a seminar. But, for the topic which I got this time, I did not even look at one book . . . actually there is only one book in the library. But, there is nothing much relevant in that book that I need. . . . But I could take information about the whole topic from within half an hour, which I wanted. That is a big achievement"(ARW2).

Reshma was a student who was very ignorant about how to use the Internet, and she did not even know how to hold a mouse properly or how to use a web browser. For Reshma, her identity was experienced through her competence she has gained in the form of taking information about the seminar topic from the Internet. Her search in the library for books with the specific topics made her realize that there was only one book available on her topic, and even that individual book did not have the relevant information. It was a big achievement for her with the new Internet competence gained when she proudly said that she could get the information she wanted with in within half an hour. Here, Reshma also recognize what a difference the competence gained by becoming a member of the imagined community of the Internet world could make, when she realized and also compared her previous efforts in looking for information for her seminar topics.

Deepa reflected in the fourth AR research workshop:

"I have never thought of creating my own blog and sharing my opinions and viewpoints online. Now I add to my blogs when I go home. I have a great love of art . . . so I search for images . . . then for songs . . . and for browsing the UN [United Nations] sites . . . now my urge to do it has increased" (ARW4).

Deepa was a student who had an Internet connection at home and who was comfortable using the Internet. However, for Deepa, her identity being a member of the world of the Internet was the newly acquired competence she gained after joining the group. She feels competent having gained the new skills to write blogs. For Deepa, the competence gained was also in the form of looking for images, as this was very significant for Deepa because she loves art and for her how to search for images related to art and to listen to songs through the Internet were also a significant part of her identity as an Internet user.

Saritha's reflection also displayed element of how she perceived her competence, which she reflected in the second AR workshop:

"I have created an e-mail account. I have added all seminar topics to the e-mail account. . . . It's a great thing. I can access information whenever I want, as it is saved there" (ARW2).

Saritha was also a student who did not have knowledge and skills to use the Internet before joining the group. She identified herself as being a member of the world of the Internet by way of gaining the ability to create an e-mail account. Saritha's reflection shows how she identifies herself with being an Internet user by recognizing that now she can save whatever she wants through the e-mail id which she created after joining the group which was important for her as much as communicating with the e-mail account, because she sees the e-mail account as a tool for storing her Internet-search information, because she did not have a personal computer at home.

Mubeena also reflected on the element of competence in the informal interview in 2012:

"My knowledge levels have definitely improved. It has been helpful to take information for my seminars and assignments, and also I now use more of Facebook" (SR12).

For Mubeena, identifying herself as an Internet users included her improved social networking skills in addition to using the Internet for her academic activities.

Thus, the students' membership in the imagined community of the Internet was translated as an element of competence, and in Wenger's (1998) words, it was through what they recognized, what could be pressed into service, what was understandable and negotiable.

Our identities are shaped through our confrontations with the

unfamiliar (Wenger, 1998). Thus, our identities are constituted by not only by what we are but also by what we are not. For some students, identity was also manifested through confronting the unfamiliar. What they met was, in Wenger's words, foreign or opaque to them.

Anuradha reflected in the fourth AR workshop in the group interview:

"In the beginning I didn't know anything. I hadn't even heard of Google Scholar or Google Books. I had heard of Google Maps and Calendar but did not know how to use it. I had not seen or used it. I had difficulties with handling the mouse properly. I am telling you this openly. Now I can handle it properly, and it's better . . . and coming to speed. I had a lot of difficulties . . . it was slow. . . it's not that I have good speed in doing . . . but I have improved . . . now I can type a bit faster" (ARW4).

Anuradha was a student who did not use the Internet at all before she joined the group. Handling a mouse was even difficult for her and she had lot of difficulties with the typing speed. Thus, for Anuradha how she identifies being a member of the world of the Internet is thus by coming to knowing the unfamiliar things that she could not handle or do, which had influenced her Internet usage. Even though she is a master's student, she had not even heard of Google books and Google scholar or calendar.

Tahira's reflection in the fourth AR workshop was like this:

"I came to know a lot of the tools through this. I had heard of Boolean search and all before . . . but came to know what it is and . . like books, scholar, Wikipedia, like I had heard of Wikipedia, but what it is and that we can get quick information this I realized after this . . . thinking of the Internet, I have mostly heard of chatting and mailing, but all the other things I came to know through this . . ."(ARW4).

Tahira's reflections show that for her, the Internet was synonymous with chatting and e-mail. Even though she had heard of Wikipedia, she only knew that she could get quick information through it, only after joining the group. Tahira was identifying herself as a member of the world of the Internet by realizing what she cannot interpret and what she could not recognize before joining the group to learn the Internet.

For Jasna it was about understanding herself by what was alienating her from effective usage of the Internet. She stated in the fourth AR workshop that

"Earlier I did not know anything, like I even did not know how to hold a mouse properly . . . now I can handle a mouse properly" (ARW4).

Jasna, Tahira, and Anuradha were novice users who lacked knowledge and did not have any Internet-usage skills. Therefore, for them, their nonmembership in the imagined community of the Internet shaped their identities by confronting what was unfamiliar about using the Internet, which was in the form of typing speed, holding the mouse, and the various Internet tools and applications which were introduced to them through the learning group. How Jasna, Thahira, and Anuradha negotiated their identities is in line with what Wenger (1998) states that "when we come in contact with new practices, we venture into unfamiliar territory (p. 153)"

It was not only the novice users who had to tackle the unfamiliar but also the experienced users like Deepa and Mubeena, who were the two students out of the three in the whole group who were quite acquainted with using the Internet prior to the training and workshops. In the fourth AR workshop, Deepa said:

"Before there were lots of tools, I had just explored and clicked on out of curiosity . . . there were times when it was useful . . . but sometimes I leave it like that. . . . See this, Delicious [an online social bookmarking service], I have never heard of it before. I came to know that it's so useful. Then Google Forms, Google Docs, even though I have heard of them . . . I did not know this much. Then sharing, I did not know that we have to type the e-mail id to get it shared. I have done Boolean searches two or three times before, but did not know the exact tricks of searching. Then, Mindmeister, I did not even know that there is an application like that" (ARW4).

Mubeena also echoed the same in the fourth AR workshop:

"I did not know what Mindmeister was. I hadn't even heard about it . . . likewise others, like blogs, I had only heard but never used . . . I was never on Twitter . . . now I know all these . . . the biggest thing is that I could learn lot of things" (ARW4).

Deepa and Mubeena knew how to use the Internet before, as both had computer and Internet connections at home. However, by joining the group to learn more about Internet usage, their identities of being Internet users were redefined by coming to know the unfamiliar things that they did not recognize earlier as an Internet user. This also shows that familiarity with the Internet did not make them identify themselves as highly competent Internet users; they also negotiated their identities

through what they did not interpret, or what was foreign or opaque, in Wenger's words.

Thus, students also identified themselves as Internet users by what they could not do or perform on the Internet. Coming in contact with the unfamiliar was experienced by novice users who lacked basic knowledge as well as by the experienced members of the group. The students' statements show what is stated by Wenger (1998), that identity is also about coming to know what we do not recognize, what we cannot interpret, what alienates us, what we cannot use, and sometimes what remains out of reach.

Thus, what was seen was, that for some students, their identification with the imagined community and the ways in which they constructed identities as being Internet users were linked to displaying the Internet competence they gained through the training and workshops. In addition, for some, it was also by confronting what was unfamiliar and coming to know the attributes that were new to them in terms of Internet usage. In these ways, they defined who they are by the familiar and the unfamiliar, as stated by Wenger (1998).

6.4.3 Learning Trajectories

"Identity as a learning trajectory defines who we are by where we have been and where we are going" (Wenger, 1998, p. 149). For Wenger (1998) "trajectory is not a fixed path that can be foreseen or charted but a continuous motion" (p. 154). The various learning trajectories stated by Wenger have been explained in chapter 2.

In this research context, learning trajectories for the students are identities conceptualized in terms of understanding where they come from, where they are, and where they are going with respect to Internet usage. Data analysis of participant observations and students' reflections showed that the learning trajectories for the students varied. The learning trajectories of the students in the group were mainly reflected as inbound and insider trajectories. As discussed in chapter 2, in inbound trajectories, new comers are joining the community with the prospect of becoming full participants (Wenger, 1998). Taking the example of Jasna and Bindu, they were two students who identified themselves with inbound trajectories.

Jasna's reflection showed that she was in the inbound trajectory both in the second AR workshop and the fourth AR workshop. In the second AR workshop she said:

"It's the first time that I am doing a PowerPoint. I still have confusion on how to format, how to put pictures, I feel that still, I do not know much . . . on how to take and where to click and all, and I don't have enough speed to do the Internet search . . . but feel that I know some information and how to perform an Internet search much than before. But I would like to know more about the Internet . . . and I would like to do my seminar presentations in PowerPoint" (ARW2).

What she stated in the fourth AR workshop was *"Compared to before I can say there has been a lot of improvement. Earlier it was difficult typing my name even. I can type my Gmail ID. See . . . I did not even have a Gmail ID before. I don't think my usage is good enough, but I am really interested to use it now since I know now and would like to use it in future and improve my usage" (ARW4).*

Bindu reflected in the second AR workshop like this:

"I did not even know how to search. Now I know how to search. If I get a seminar topic, I know how to go and search information. I don't have enough speed to do an Internet search. I have some fear and I still get confused about what to take from the Internet. But I really have the desire to learn more now and use it later in the future"(ARW2).

Jasna and Bindu, who lacked basic knowledge to use the Internet, were new comers in the context of the imagined community of the Internet. Jasna identified herself as someone who had trouble even typing her own e-mail ID, and her difficulties in handling the mouse is reflected in when she says that she did not where to click. Bindu also states that she was someone who did not know much about the Internet. Jasna and Bindu still have a long way to go to become really proficient in terms of Internet usage, and they both identify themselves as "not great users" of Internet. Jasna feels that she needs to know a lot about the Internet, as she still got confused in the second AR workshop, but in the fourth AR workshop, her confidence level had improved and she stated that she wanted to better her Internet usage more in the future. Bindu also stated her inefficiency in terms of her confusion as to what to take from the Internet, her technophobia, and how slow she was at finding information.

Even though they did not become proficient in the Internet skill and were not yet full members of the Internet community, what was reflected in their statement was their desire and motivation to use the Internet in the future. Both Jasna's and Bindu's statements validate what is stated by Wenger (1998), that sometimes "[e]ven a very peripheral participation may turn out to be central to one's identity,

because it leads to something significant (p. 155). Thus, their access to the practice of Internet usage became significant enough to contribute to their identity even though their participation at that time was peripheral.

Another learning trajectory identified in the group was the insider trajectory. In insider trajectory even though the participants are close to the center of participation, they renegotiate their identities with new demands, events, and inventions. Deepa and Mubeena were two students who were identified in the insider trajectory. They were the ones who knew more about the Internet: they had some experience and seemed to guide the other students in the training and workshop sessions. These two acted as the core of the group (Wenger et al., 2002). They took on the role of leaders and were very active in discussions. They helped the other students in the group. Even though they knew how to search and look for information there were many activities and events that lead them to renegotiating their identities with the many new features and applications that they came to know after joining the group.

Deepa stated in the second AR workshop that:

"I know the format and all . . . like when I have gone to other seminars, I have noticed that I know some tricks. I was trying to make a presentation for the seminar topic. I tried to make a presentation style. Presenting in front of a group . . . in the next two weeks, I need to take a class . . . I think that it's an opportunity, My timings is a weakness .. . . I can't do in correct time" (ARW2).

Deepa reflected in the fourth AR workshop:

"I got to know many techniques to search and find information fast. Got to know tools . . . I feel that my speed in using the Internet has improved" (ARW4).

Mubeena's statement in the second AR workshop also somewhat mirrored what Deepa had stated:

"The first time I am doing a PowerPoint while simultaneously searching for information on the Internet . . . I could do that . . . Even though I did it wrong today, I know how to do it and I feel confident that I can do it better in future . . . Next seminar is coming . . . I am definitely going to present in PowerPoint." She also added later, "The biggest thing is that I could learn a lot of things . . . and in coming years it will be very much needed"(ARW2).

As stated earlier, even though Deepa and Mubeena were quite comfortable with the Internet, there were many things that they learned and that presented them with challenges. Both were quite exited about making a PowerPoint presentation. Even though they knew PowerPoint before, it was their first experience with searching for information about a topic on the Internet and simultaneously presenting in PowerPoint. Deepa came to know that the amount of time it took her to get information was quite bad in the second AR workshop. She reflected later in the fourth AR workshop that her speed of searching and retrieving the information from the Internet had improved through the training and workshops, and she also came to know many new search techniques for finding. Both of them indicated that they will definitely use the Internet for searching their individual seminar topics and will do a PowerPoint presentation based on the search results instead of reading from the paper as they used to; they see this as a new opportunity. Deepa's and Mubeena's statements substantiate Wenger's (1998) assertion that the "formation of identity does not end with full membership (p. 154).

What was seen was that the students were learning something new related to Internet usage, and it was becoming an event of the trajectory, which gave meaning to their Internet usage and how they identified themselves as being Internet users in relation to the imagined community of the World Wide Web. Through giving meaning to where they stand and what they want to do in the future through the inbound and insider trajectories also provided motivation for their future participation in the world of the Internet.

6.4.4 Nexus of Multimembership

Wenger (1998) states that identity is an experience of multimembership, and is defined by the way people put their efforts toward reconciling various forms of membership so as to maintain one's identity across boundaries (p. 158). Individuals belong to many communities: as students, parents, church-goers, or bar–goers; some have hobbies and thus the notion of identity is an experience of multimembership and is defined by the way people apply their effort in reconciling various forms of membership so as to maintain one's identity across boundaries. Moreover, these multiple identities are not something that we can turn on and off (Wenger, 1998).

An analysis of the data revealed that some of the students had a conflict in maintaining the identity as an Internet user, which was a result of the patriarchal gender roles that are pertinent in the society to

which they belonged. In a CoP, learning is viewed as being influenced by the structural divisions, such as class and gender, which are reflected in communities that facilitate or restrict access to resources, activities, and technology (Contu & Willmott, 2003). Students in the research context were living with multiple identities, being women in the specific cultural contexts, which also means being a daughter and/ or a sister, and these identities influence their usage of the Internet. Moreover, how they reconcile to work on the tensions is very critical for their identity as being an Internet user. In this research context, these structural division of being a woman constrained their learning opportunities.

Because most of the students were from weaker economic backgrounds, the easiest and cheapest points of Internet access were Internet cafés. However, the cultural factors in the form of the patriarchal structure inhibited their mobility and usage of public Internet cafés, even though they wanted to use them, was an example of how they realized about managing their multiple identities, which influence their Internet usage. Taking for example what Jasna and Anuradha had to say.

Jasna reflected in the fourth AR workshop on how she had to manage the multiple identities:

"I had some difficulties in attending the training, like attending the evening classes was really difficult.. . issues with the bus and all . . .but I have somehow managed to come for the evening sessions . . .Going to an Internet café and all . . . I don't think it will be possible . . . there will be a limitation" (ARW4).

Anuradha also expressed in the fourth AR workshop that going to an Internet café would be difficult for her:

"I do not have the opportunity to use the Internet at my place. If I want to use the Internet, I need to go to town. It is a little difficult, and I will not be allowed to go and do that. I have some issues like this at home" (ARW4).

Jasna's and Anuradha's statements reflect how being a woman in the cultural context is a constraint for women. Jasna was a day-scholar coming from home, and she had to manage the conflicts that arise from being a woman in a cultural context where she was expected to be back home before dusk. Because it is not safe to travel alone unaccompanied in the dark, for her, coming to the training in the evening was a difficulty; however, she did manage to come. For her,

being able to use an Internet café in the future was also doubtful, similar to Anuradha. Since they did not own a computer and did not have an Internet connection at home, their participation in the community of the Internet could have been possible through the public Internet cafés. However for Jasna and Anuradha, visiting a café has some limitations, which was the same for the other students in the group. In a country like India, in small towns and remote villages, Internet cafés are not considered culturally appropriate places to hang out for girls, and, even if they go, they prefer to be accompanied by someone (Johnson, 2010), which I have discussed earlier, in chapter 5. Thus, for these students, constructing identity in terms of becoming an Internet user requires the "work of reconciliation necessary to maintain one's identity across boundaries," as argued by Wenger (1998, p. 158).

Some examples of how, because of their being a woman in the cultural context, the students had to work on their multiple identities can be seen in the statements made by Deepa, Lakshmi, and Bindu when they were asked in the third AR workshop what difference it would make for them if the researcher or the trainer in the learning group was male.

Deepa: *"Even if its two persons together I would not go if it is a male. Most of the time sessions are after the class hours . . . Even if I tell at home, they won't allow me. I have two brothers at home. I know they won't allow . . . if it was my life I would have gone, maybe . . . when we speak over phone . . . we say that it is a "chechis" (woman) class . . . but if we would have been told it's a "chettans" (male) class, it will definitely create a negative impact" (ARW3).*

Hima: "*I will not go if it is a male instructor, and if I was asked to go alone. (Laughing) I have four brothers!! I would have gone with friends . . . if it's with friends I will go"(ARW3).*

Lakshmi: *"A person's character can change anytime . . . you never know how . . . time is also a problem . . . maybe I can stay till 17: 30. . . see my dad asked who is taking the class. I told that it's you (meaning a woman), and see even my younger brother asked, Who is taking it for you? See I had a function today and I skipped that and came, because it is you . . . if it was a man, I would not have come" (ARW3)*

Bindu: *"At my home, they won't allow . . .in spite of you giving the training . . . I will not sit beyond 16:30, because I'll miss the bus . . . and it will get delayed by the time I reach home . . . and coming to the fact that it's male, they won't allow me at all" (ARW3).*

The issue of mobility, because of the cultural expectation of being expected to be back at home that conflicted with becoming an Internet user was also reflected by Bindu in the informal interview done in 2012.

"I do feel transformed through the training and workshops. Now I refer more to the Internet than I refer books. I definitely feel that I belong to the digital world; however, there are the same issues like my parents expect me to be home early, so I cannot sit much in the evenings using the Internet" (SR12).

For Deepa and Hima, it was managing their identities as a sister, where their brothers' decisions influenced their lives; they noted the number of brothers they have, specifying that having more brothers means having more restrictions. For both of them, any participation in training for learning would be influenced by their brothers' decisions, as they would not allow them to attend if the training is given after class hours like in this research context if the training were given by a male trainer. Patriarchal structures which influence the gender roles that women have to maintain were reflected in what Lakshmi and Bindu had reflected. For Lakshmi, it was both her father and her brother questioning the whereabouts of the trainer who would be giving the Internet training. For Bindu, it was her parental opinions and restriction that came her way. Sitting beyond 16:30 was a problem for Bindu, because of the issues of mobility arising out of the timing of the bus and the cultural expectation to be home before dusk.

She explicitly states that there is no question that she would not have come for the training in the same pattern if the trainer were a male. Even though her Internet usage had improved and she does feel a sense of belonging to the world of the Internet one and half years after the training and workshops were conducted, the cultural conflict of reaching home before dusk in the evening again was something she had to manage. Lakshmi also stated that the reason why she skipped a function to come and attend the training is because of the fact that it was me (a woman), and she would not have bothered to come if it were a male, again showing the gender-role expectations of being a woman in the context, because again she would have had to answer her father's and brothers' unending questions.

What is reflected in these statements by the students is how they have to manage multiple identities while being an Internet user. Training and workshops provided a platform for them where they could learn the skills to become members of the world of the Internet. However, even this was influenced by how they must reconcile the

conflicting demands that are culturally rooted in being a member of other communities; for example, by being a daughter or a sister in the social context to becoming a user in the world of the Internet. This shows that "maintaining an identity across boundaries requires work, and this work is not an independently defined boundary but a part of the core of what it means to be a person" (Wenger, 1998, p. 160).

Thus Wenger's (1998) argument that "multimembership involves ongoing tensions that are never resolved" (p. 160) is relevant for the students in this research. Since most of the students did not have computers and an Internet connection at home, and because the easiest and cheapest form of access for them was through public Internet cafés, they faced difficulties in accessing the Internet. It was not easy for them to access the public Internet cafés, being women, and joining a group to learn to use the Internet was again restricted by factors like time and mobility. The cultural norms that expected them to be back in their home before dusk, in a way constricted their participation in the world of the Internet because of their possibility of access were limited to confined periods (a topic that is discussed in detail in chapter 5).

This analytical component of identity can provide new insights to understand the effectiveness of learning to use ICT by women users in a developing context because learning to use Internet or any ICT tool is influenced by belonging to multiple communities in a developing country scenario for women users because of the patriarchal structure and the gendered role definitions being a women in the cultural context.

6.4.5 Local and Global

The practices in a community are not confined to the local context but to a broader context of things. "We define who we are by negotiating local ways of belonging to broader constellations of and by manifesting broader styles and discourses" (Wenger, 1998, p. 149). For the students in the research, constructing identity through learning with the training sessions and AR workshops should fit a broader scheme of things. That the way identities are constructed involves an interplay between the local and the global is reflected in the statements of Deepa, Saritha, Bindu, and Hima.

For example, Deepa reflected in the fourth AR workshop: *"see I had studied literature . . . so I like authors and personalities like Paulo Coelho and Alice Walker . . .they all are there on Twitter . . . I can add them now" (ARW4).*

For Saritha, applying the skills to a broader context was getting in touch with a foreign author of a book through e-mail, as she explained in the fourth AR workshop:

"When we did that search and got authors mail . . . and when I told mam, then she said that . . . 'you are getting the effect so fast' and mam told . . . you could have sent the mail again . . . that you could have told about the department of women's studies and all . ."(ARW4).

Bindu and Hima reflected in an informal interview in 2012, as follows:

Bindu: *"There has been a lot of changes which came through using the Internet. I can take any information that is relevant for my studies. And now I can use the Internet for searching for job opportunities and have already applied online for the PSC [public service commission] all alone by myself without anybody's help" (SR12).*

Hima: *"I do feel transformed and feel a sense of belonging to the Internet world after I have started to use the Internet with the training and workshops. The biggest achievement for me is to apply for jobs online. That is a big thing, like the PSC exams and also looking out for other job opportunities, it is indeed helpful . ." (SR12).*

Both Deepa's and Saritha's reflections are in line with what Wenger (1998) refers to as directing the local energy to create global relationships. For Deepa it was about following her favorite authors on Twitter, through which she finds out how her engagement fits into broader enterprises, and thus she identifies herself as part of the community of the Internet, not just in terms of searching and retrieving information from the Internet. Saritha was searching for a particular book that she wanted to refer for her seminar topic, and, in the process, she got the e-mail address of the author whom she attempted to contact. She felt that it was unbelievable, because it was something she could not do before becoming a member of the world of the Internet. Saritha's experience also shows what Wenger described as the local-global interplay, where broader categories and institutions attract our attention because they are often more publicly reified. For example, when Saritha tells her teacher that she contacted the author through e-mail, it resulted in positive feedback, as the teacher told her to contact the author again to make her aware of the women's studies department, and this bought a sense of achievement for Saritha.

Another example of how identity is defined as a relation between the local and the global, and how it is connected to the broader scheme of

things was reflected in the statements made by Bindu and Hima. Bindu and Hima were students who did not have any knowledge of how to use the Internet. They lacked confidence and had high technophobia. For both, an important aspect was how being an Internet user is an act of local and global interplay came in the form of applying for a job through Internet. By searching for job opportunities and applying online for jobs, they expanded their horizons of being an Internet user to a broader context.

Thus, how the students identify themselves as Internet users through the analytical components of identity is the empowering process. The empowering experience that the students found through joining the group to learn to use the Internet through training and workshops, it can be argued, is owing to their gaining a sense of belonging, realization about their conflicting identities, and discovering how they gain power within.

6.5 Empowering Experiences through Constructing Identities

Figure 6.10 shows how the empowering experience through constructing identities is perceived in this research.

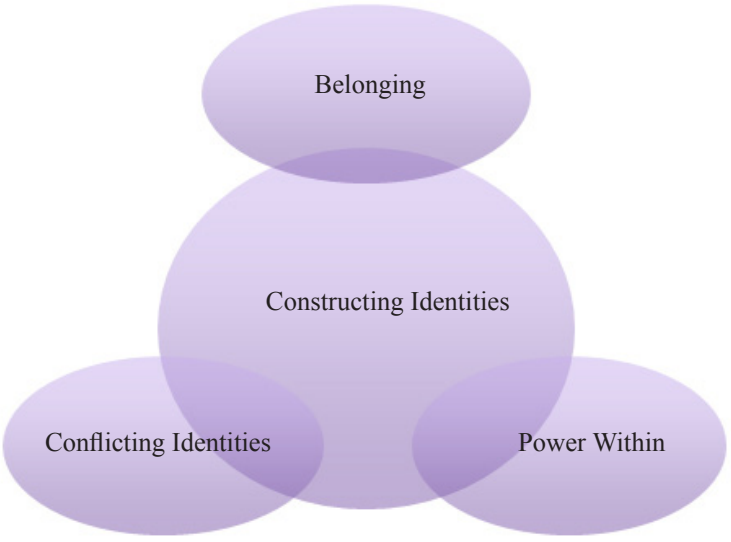

Figure 6.10. *Empowering experience through constructing identities*

6.5.1 Empowering Experience through Belonging to the World of the Internet

From the data analysis based on the analytical characteristics of identity, it is seen that students developed a sense of belonging to the world of the Internet through engagement within the group by performing Internet and online activities. What I can observe from the data is that, when students developed a sense of belonging, of being an actual user of the Internet, they realized the difference that being an Internet user makes, that is, they recognize the value it adds to their lives.

This identity, which is lived and negotiated through social interactions, is viewed as the empowering process for the students in this research. This is because the approach to developing a sense of who they are as Internet user was very useful, as learning to use the Internet by focusing on the process and the experience of using the Internet brought empowering experience through a skills-based approach. What I found at the beginning of the research was that the students were not using the Internet because of a second order divide relating to the availability of Internet access facilities. The reasons they were not using the Internet were mainly attributable to factors such as lack of knowledge and skills, technophobia because of anxiety, low Internet self-efficacy, and low motivation levels making them stay away from using the Internet. In addition, searching the Internet and getting adequate and relevant information is a complex process, which requires a great amount of specialized searching skills. What was also identified in the research training sessions and workshops was that getting to know how to use Internet was not an easy task for them because of the diverse paths of navigation and usage options, as noted by (Iske et al., 2008). Surfing from one hyperlink to another will not bring optimal results; it requires specific navigation and browsing skills to find the most relevant information (Savolainen, 2002). Since apart from three students in the group all others were naive at using the Internet, getting all of the relevant information was quite challenging for the students.

What I discovered from the analysis of the data based on the analytical components of identity is that when learning was viewed not just as gaining skills and competence in using the Internet but was also viewed as an experience of being identifiable as an Internet user, students experienced learning to use the Internet as less stressful and complicated because they had developed a sense of achievement by being members of the world of the Internet by focusing on “belonging”

rather than on the "ability". Most of the students were novice users, and after joining the group, they began constructing their identities by engaging and learning from each other in the group. This also can be viewed as an empowering experience in terms of being aware of where you are and who you are in terms of the world of the Internet.

It was seen that by belonging to and identifying themselves as members of the world of the Internet they started to value the practice of Internet searching more. They felt that they could be more successful using the Internet in future, even though they have not become experts through the training and workshops. When students were asked through informal interviews a year and a half after the training was complete, all the nine of the students present reflected that they feel a sense of belonging to the world of the Internet and they feel they have been transformed as an Internet user after they joined the group. Thus, it can be concluded that by finding more value in the Internet and by developing a sense of belonging to the world of the Internet they constructed their identities as Internet users, which brought about empowering experiences for them.

6.5.2 Realization of Conflicting Identities Brings Empowering Experience

One of the significant characteristics of identity that was very relevant for the students in the research was the concept of multimembership. For the students multimembership meant being a woman, a student, a daughter, or a sister, and the concept is relevant because the students' Internet use was heavily influenced by the cultural compositions of the society to which they belonged. Even though the Indian constitution grants equal rights to women and men, strong patriarchal traditions persist in the societies (Vijayalakshmi & Bhavani, 2006). And, the students' reflections, which have been discussed earlier in the nexus of multimembership section clearly indicated that the choices they make and their decision to use the Internet were also influenced by the culturally specific roles expected of them. These gender-role definitions have an impact on the Internet usage in relation to access, which reflects what is stated in the literature: that cultural perceptions toward technology influence the acceptance and future usage behavior of the users(Chen, Mashhadi, Ang, & Harkrider, 1999; Leidner & Kayworth, 2006; Loch, Straub, & Kamel, 2003; Straub, Loch, & Hill, 2001). And, coming to the Internet-usage culture is one of the important factors in determining the ability to learn the skills required for Internet use (Dholakia et al., 2003).

Realization of multiple identities through learning and reflections brought empowering experience for the students as they became conscious of what they have to reconcile to become an Internet user. The concept of constructing identity helped the students in understanding that to be an Internet user, they have to manage and negotiate multiple identities, being a woman, daughter, or sister. It helped in bringing insights on the social stigmas that affected their Internet usage and to remove the obstacles, which were the results of being a member of the multiple communities. This finding is similar to the study done by Lord and Hutchison (1993), where one of the characteristics that facilitated the process of empowerment for the participants in the study were the complex situations due to the crisis in the culture; the process brought the participants new awareness and new opportunities.

The notion of multiple identities also helped in making the students realize that it was not only about the issues of access rather it made them aware of how they had to negotiate these identities to become an effective Internet user. Thus, the notion of identity made them realize a sense of themselves as Internet users within the context, which is unique in respect to factors that influence their identity as an Internet user, which had empowering effects on them. Moreover, they became aware of the fact that maintaining an identity as an Internet user requires work and this work is not about an independently defined boundary but is at the core of what it means to be a person which is was about being a woman in the specific cultural context

The realization of conflicting identities led the students to empowering experiences; they came to understand the sociocultural conditions that had shaped their opportunities for Internet usage. Discussing within the group also helped them in coming to know that these conflicting identities are something everyone has to deal with and not something which they alone were dealing with. Thus, the concept of constructing identities through learning brought empowering experiences through awareness of the gender roles that they had to deal with to become Internet users.

6.5.3 Empowerment through Gaining Power with Identity Change

As reflected in the theoretical framework described in chapter 2, the notion of power is very significant in understanding empowerment. It is a change for the better (Parpart et al., 2002) and is the ability of individuals to gain more control over their lives (Sadan, 2004).

The powerlessness of the students in the research context is viewed as the inability to have the skills and required knowledge to use the Internet for their benefit. Powerlessness for them is also the result of lack of understanding or consciousness on what difference being the Internet user could have on their lives, as the result of a lack of Internet-usage experiences in their lives. In this research, empowerment according to the concept of power will be a transition from a state of powerlessness to a state of power. For the students in the research, constructing identity through learning is a process that brings "power within," which leads to empowerment. Therefore, from the power perspective, the empowerment process is about the experiences and activities in the Internet training and workshops, which can be viewed as gaining "power within" through constructing identities and becoming an Internet user.

These experiences and the awareness through which the students became members of the world of the Internet took different forms. It was important that they realized how they were as Internet users before the training and workshops, as well as where they have reached now as an Internet users and how they see themselves using the Internet in the future. Power within is also gained through gaining familiarity with the Internet community they experience, which gives the students the feeling that they can handle themselves completely. This feeling of handling themselves, as identified earlier in the data analysis section, gives the students a sense of control over themselves in terms of using the Internet, which gives them a feeling of power within. For the students through "coming to" know what they did not know and discovering other ways of being also defined their identities. This made them aware of what they had been missing. They were able to express their feelings in a positive way, because the awareness of what they did not know did not make them feel inferior or frustrated. It made them positively aware of the various things they were missing out on. Thus, this awareness only had a positive effect, because they got concrete experiences and skills to approach the Internet with all the related programs and applications. Therefore, this process also brings "power within." Thus, students experience their "power within," which is mainly about the change that they feel through the experiences that increase their individual consciousness as students identify themselves as Internet users. Moreover, their awareness and consciousness of being Internet users is located within the specific cultural context to which they belonged.

6.6 Summary

This chapter has given an account of how constructing identities through learning to use the Internet is perceived as the empowering process for the students in this research. This chapter shows how students, by mutual engagement and sharing in the immediate group, identify themselves as a member of the larger community of the World Wide Web, which I conceptualize as the imagined community for the students. It can be concluded that the identity of the students as they became Internet users in the context of the research were influenced by an interplay of many factors such as their personal identity which included being women with respect to the specific social context which influences the gender-role definitions of their culture, which affected their Internet usage; previous Internet-usage experience; knowledge level of the Internet; and policies of the institutions that they were affiliated with. Students' resistance to participation in using the Internet was also the result of not being able to get the connection or the sense of belonging to the imagined community of the Internet.

The imagined community of the Internet, which the students identify with, predominantly influenced the experiences of identity that the students stated through direct engagement within the group. This belief of imagined community had a stronger impact on their investment of time and energy in learning to use the Internet, and this influenced their motivation for future Internet use. Thus, by direct involvement through engagement with other group members they identified themselves with an imagined community of the world of the Internet, and this construction of identity can be viewed as the empowering process for the students in the research context. The indicator of how the process of empowerment happens for the students is thus how the student's have constructed their identities as users of the Internet in the imagined community of World Wide Web.

While this chapter is about the process of empowerment through learning to use the Internet, the next chapter will focus on how the empowerment is measured through the outcomes of the process of empowerment.

CHAPTER 7

Analysis & Findings: Measuring Empowerment

The aim of this chapter is to analyze and discuss:

- How students' empowerment through the ICT Intervention can be measured.
- How the measuring empowerment (ME) framework has been used in this research to measure the phenomenon of empowerment not only through the indicators of empowerment defined for the research but also by identifying whether there is sufficient opportunity for the students to use the achieved competencies and capabilities through the project in the future.

7.1 Measuring Empowerment through the ME Framework

As discussed in the theoretical chapter, the research holds the view that the presence of individual empowerment can be captured and measured (Staples, 1990). There is no universally accepted method for measuring empowerment because measuring the concept of empowerment is complex and difficult. As discussed in Chapter 2 on theoretical framework, the research deploys a framework for measuring empowerment which is the "The measuring empowerment (ME) framework" developed by Alsop and Heinsohn (2005).

Figure 7.1 illustrates how the elements of the framework have been used to measure empowerment in this research context. Agency represents the empowerment indicators developed for the research, which are described in Chapter 2. Having become empowered through more knowledge and skills, reduced technophobia, improved Internet efficacy and motivation to use the Internet, I have looked into whether the students have the opportunity to use these acquired skills after the research is completed. The ME framework provides the scope to measure this aspect of empowerment through the elements of opportunity structure and degree of empowerment. Opportunity structure, meaning that which favors the students' use of the Internet with the acquired competencies and capabilities, is identified as the university, ICT laws and the gendered role definitions. The degree of empowerment, which leads to developmental outcomes, is interplay of the factors of agency and opportunity structures.

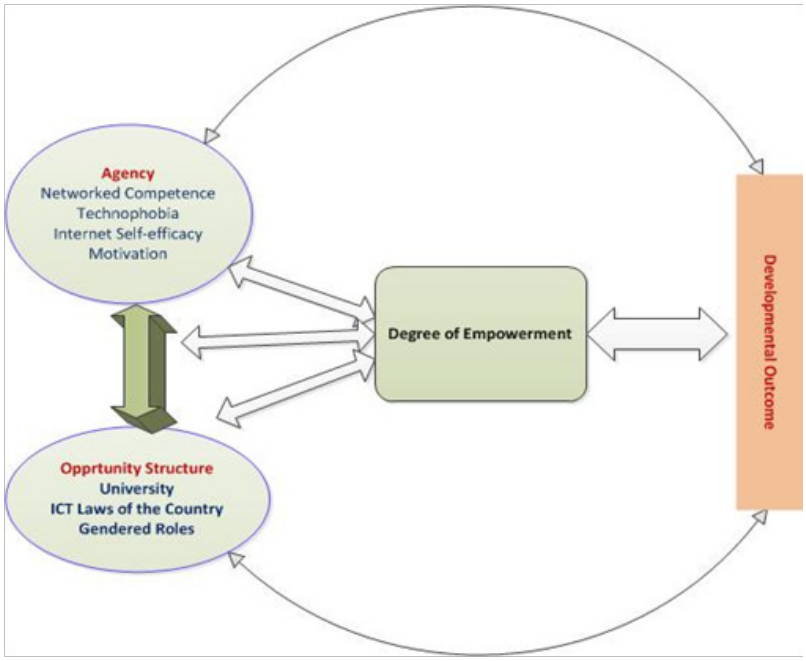

Figure 7.1. *ME framework used to measure empowerment in the research context*

7.2 Indicators of Empowerment (Agency)

Any research or project, which has empowerment as its developmental goal, should have clearly defined indicators for measuring the empowered outcomes. The indicators developed should cover differential effects of interventions on distinct aspects of empowerment which the research aims for (Malhotra et al., 2002).

The indicators that have been developed through this research are viewed as the outcomes of empowerment. As discussed in Chapter 2, the outcomes in this research context denote operationalization of empowerment and refer to the specific measurements, both quantitative and qualitative that are used to study the effects of interventions designed to empower the participants (Zimmerman, 2000) and the empowered outcomes are the results of the empowerment process (Zimmerman, 2000; Zimmerman, 1995). In the ME framework, agency is the capacity to make a meaningful choice and this is measured as asset endowments. These asset endowments are the indicators of empowerment, and the framework recommends identifying the core elements of measuring empowerment depending on the context and does not suggest any ready-made indicators of these endowments for measurement. Thus, the framework provides the flexibility to

develop empowerment indicators depending on the project's context by considering the requirements of the project participants. In this research, the empowered outcomes are measured through the indicators of empowerment that have been developed for this research through networked competence, technophobia, self-efficacy, and motivation to use the Internet (refer Chapter 2).

Figure 7.2 shows how the empowered outcomes are measured through increased networked competence, improved self-efficacy and motivation to use the Internet in future and through reduced technophobia for the students through learning to use the Internet.

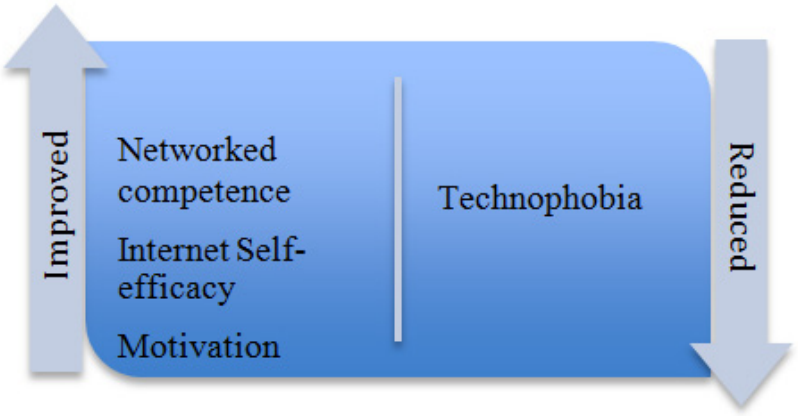

Figure 7.2. *How Empowerment is perceived through changed indicators*

"People are empowered, or disempowered, relative to others or, importantly, relative to themselves at a previous time" (Mosedale, 2005, p. 244). Here empowerment is measured through the changes reflected by the indicators of empowerment stated above from the time they started learning to use the Internet.

The level at which empowerment occurs is considered to be at the individual level as empowerment of the individual woman student and not the collective empowerment of the group of students as discussed in Chapter 2. The personal transformation and change that happens for the students was the core element of the research.

7.2.1 Improved Networked Knowledge

As reflected in Chapter 1, access to the Internet is not only about physical access and being connected to the Internet but also includes possessing the required online or digital skills to use the medium effectively and efficiently (Hargittai, 2003; van Deursen & van Dijk, 2009, 2010a). Analysis and findings regarding the barriers that prevented the students from using the Internet showed that one of the factors which restricted their Internet usage was that they lacked the skills and knowledge to use the Internet even though they had sufficient opportunity to use the Internet (refer Chapter 5). The findings of this research validate what is stated in the literature that one of the main factors which contributes to digital divide is the lack of Internet skills, and even though the physical access gap is addressed and closed in developing countries, the skills gap in using the Internet tends to grow (van Deursen & van Dijk, 2010a).

The students in this research context had positive attitudes towards the Internet and believed that learning to use the Internet would add value to their lives. It has been observed that one of the main reasons why people with positive attitudes stay away from computers is due to lack of skills or knowledge (Rosen et al., 1993); similarly for the students in the research context, one of the reasons why they did not use the Internet was due to lack of knowledge and skills to use the Internet even though they had positive attitudes towards the Internet.

Knowledge and skills to use the Internet were very significant for the students, as the other empowerment indicators are eventually related to their lack of knowledge and skills. Lack of knowledge and skills brought technophobia, which resulted in low confidence levels, and this was linked to their motivation for using the Internet. In the research, the students were given Internet training based on Bloom's Digital Taxonomy of learning domains to improve their networked competence. Each training session was followed by an action research workshop where they reflected on and shared their experiences of searching and finding information on the Internet. They also discussed the difficulties they faced in using the Internet with the group and learned from each other (refer Chapter 4).

In this research context, focus on the networked competence gained to use the Internet was not based on parameters of time spent on the Internet, the concrete applications they used or frequency of applications and tools introduced to them through the research. What was given thought and consideration was that out of the twelve students, only three were quite familiar with using the Internet. So, as

discussed in Chapter 2, networked competence means to have the skills to identify, retrieve and use the correct information from the Internet. Emphasis was on the reflective and conceptual capabilities on how to use information and content available on the Internet. However, knowledge gained was also evaluated, as it was an indicator that had to be measured as an outcome of empowerment for the students in the research.

Firstly, I will discuss the improved knowledge and skill levels of the students, which were identified during the reflection process of the action research workshops.

In the first AR workshop on the Internet usage experience about finding out which woman's "sati" caused the Government to pass the Sati (Prevention) Act 1987 , Soumya shared with the group:

"We did a Google search, wrote 'sati prevention act', but we did not get [the information]. We refined the search using a shorter keyword and wrote 'sati'. This gave another search list. Wikipedia was also shown. We went to Wikipedia and got the information from Wikipedia. We didn't get it straight out from just one look in Wikipedia, we had to search a bit more inside the page to get the correct information" (ARW1).

Her reflection echoes what is stated in the literature that an Internet search can give an inconceivable volume of information with many links and resources which are unstructured making it look chaotic (Edwards & Bruce, 2002; Hargittai, 2006; Lazonder, 2000).

Gaining a sense of location, evaluating the information sources and usage of shorter key words characterizes a successful search (Aula & Nordhausen, 2006; Kwan, 2001; van Deursen & van Dijk, 2010b). Knowledge gained is reflected in Soumya's statements through the elements of a web search. The students first typed the whole sentence, and when they did not get the required results, they modified the search query and typed a shorter keyword which gave them the correct information. Soumya's reflection also illustrates that they evaluated the information by reflecting. When they got the information about the Sati (Prevention) Act through Wikipedia, they also showed a sense of location while navigating within the website, as they did not seem to get lost within the website.

In the first action research workshop, Reshma reflected on the Internet usage experience on searching information about the "world's most powerful women according to Forbes magazine" as follows:

"We did a Google search, and we typed the search words as 'Forbes' and then 'world's most powerful woman'…to type short words, that's the best thing to do…we got the correct information, there was another option where we could have gone to the magazine website and searched for the information, which would have been difficult" (ARW1).

Reshma's reflections show improved knowledge and skills through the three important elements of web searches, orientation, sense of location and identifying the key organization, as stated in the literature (Edwards & Bruce, 2002; Kwan, 2001; van Deursen & van Dijk, 2010b). Their search process reveals that while they were doing the Internet search, they were not disoriented, as they did not get lost in the Internet environment. Also, the group was not confused with identifying the search results, as they could easily find the correct information, and they had a sense of location while navigating through the search results as well as within the website of Forbes. They were also successful in identifying the key organization related to the query, which was the Forbes Magazine homepage.

In the second action research workshop, Deepa reflected on how her group found information about women's educational status in India as follows:

"Concerning women's educational status in India… we went to the government's census records… we accessed that site and got the information from there…we entered after looking into what the site was…so we were fast…when we started to read, we got the information fast and then we shared it in Google Docs"(ARW2).

The elements of a web search which is reflected here through Deepa's reflection are identifying key organization, acting on the planned search and not getting disoriented. These elements have been identified in the literature for an efficient web search (Edwards & Bruce, 2002; van Deursen & van Dijk, 2010b).

Instead of doing a Google search, they identified the government census as a source of information. They had this in mind while doing the Google search and from the search results they directly went to the government census site. This shows that they were breaking down the search topic by asking what the key organization related to the topic is, similarly to Reshma's group. When they went to the government census website, they did not get disoriented while looking

for information within the website because they found the information fast. They were acting on a planned search by checking whether it was the correct website on government census before entering the website.

In the reflection session in the second AR workshop Soumya reflected to the whole group on how during the Internet activities in the second action research workshop, their group used commas and short words to get better Internet search results, which they had learned during the Internet training.

"Instead of going for a wide keyword, give specific words. We did not type the word "world" so we could not get the information in the first search. Likewise, put commas and make short words" (ARW2).

Soumya's search experience validates what is stated in the literature that participants gained skills to define search option and queries (van Deursen & van Dijk, 2010b), and people who understand how to refine search queries through quotation marks and multiple terms in a query will end up getting effective Internet search results (Hargittai, 2003)

In the third action research workshop, the students were asked to write down what problems they faced in using the tools and applications that were introduced to them. They were divided into small groups where they discussed the problems in using the Internet search tools and possible solutions for the problems through drawings. These reflections also showed their improved knowledge levels and skills in using the Internet.

Figure 7.3 shows how drawing was used as a technique to engage the students, and this decision was based on my previous observation in the future workshop that the students were more comfortable talking through the artifact of drawings.

Figure 7.3. *Group two doing a drawing*

In group number two, students discussed and came up with solutions for the problem raised within the group on how to get successful results through Google search.

Reshma stated in the third AR workshop that *"what you need to keep in mind is ... type the correct word…when you search for a topic type short keywords… put the words in inverted commas and give conjunctions like 'and'" (ARW3).*

Reshma was a student who did not know anything related to Internet prior to the intervention. Here I could also observe her improved confidence level while she explained the significance of using Boolean operators to the whole class.

A similar reflection was also identified in group three in the third AR workshop, where Soumya reflected that *"we discussed that we should try to use the keywords for searching… and using Boolean words like 'and'" (ARW3).*

Students in both groups had discussed using Boolean operators for getting efficient results which shows their searching expertise. The literature states that one of the main problems related to Internet search skills is the formulation of unsuitable and overly general search queries and lack of knowledge about using Booleans (van Deursen & van Dijk, 2009). The use of Boolean operators and Boolean logic are associated with searching expertise (Edwards & Bruce, 2002; Hargittai, 2003). Thus, the students gained knowledge on Boolean operators which can bring better search results.

In all the three groups, problems were identified with using Google Docs, and they came up with solutions for using Google Docs.

Representing group one in the third AR workshop, Deepa shared with the whole group that *"concerning Google Docs, we had discussed two problems. Problems identified were confusion on how to save and how to share the document."*

"Solutions discussed on how to save when the person who the file is being shared with is editing. Just see when the editing is done ...wait for some time and then save… Confusion in sharing the document – click on share; enter the email ID of the person whom you want to share with. And then it gets shared automatically…"(ARW3).

Group number two also identified problems with sharing in Google Docs. They discussed and came up with a solution that Reshma shared the whole group: *"Everyone has doubt about sharing Google Docs. When we discussed within our group, the main problem identified was that most of us failed to recognize the share button in Google Docs. You share the document by adding the email ID and then enter the data…it will automatically be shared with the person whom you want to share with" (ARW3).*

In group number three, Google Docs also came up as a problem which Soumya shared with the whole group in the third AR workshop:

"Open Google Docs… you need to create a new document. You have to click the share button. You need to click on the ID of the shared person"(ARW3).

The discussion on Google Docs in the third AR workshop shows they have problems in creating and sharing Google Docs. The solutions that the students came up with for the problems identified by all the three groups show that they were able to define the information problem and were also able to take the right action to reach a goal, which is a strategic Internet skill as indicated in the literature (van Deursen & van Dijk, 2010b).

In the third action research workshop where they were asked to write on sticky notes how they felt empowered through Internet usage, most of the students reflected on the element of knowledge, which facilitated their empowerment as shown in Figure 7.4.

Figure 7.4. *Students reflecting through sticky notes*

Figure 7.5 shows students expressions through sticky notes on their improved knowledge level and skills

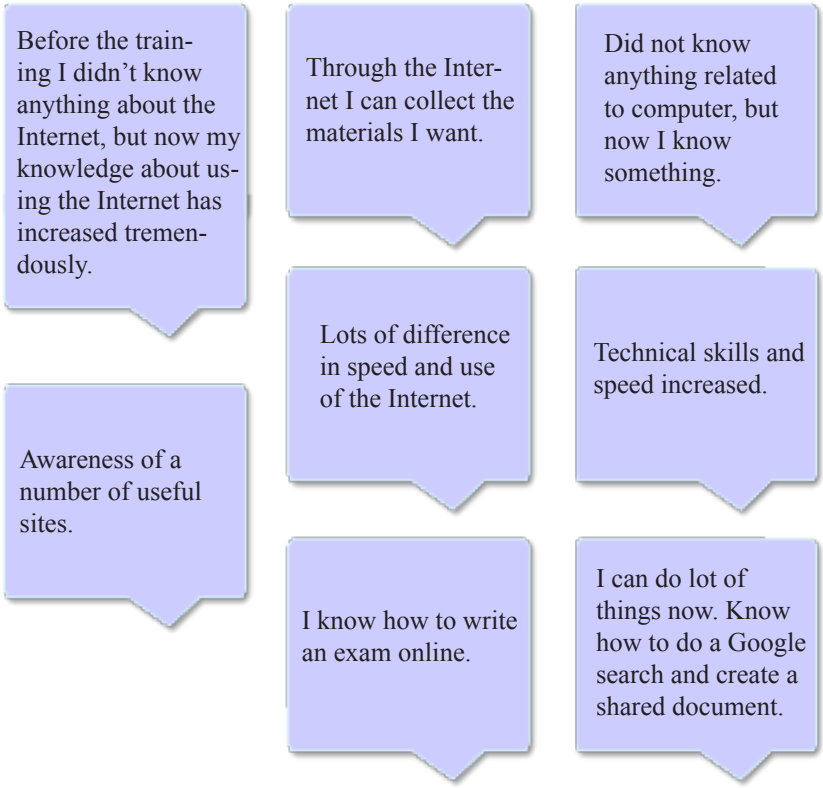

Figure 7.5. *Students refection on improved networked competence through sticky notes*

Thus, the students reflected on their improved knowledge and skill levels in different ways. For one student it was about retrieving the materials, for another it was about getting to know how to write an online exam. Improved knowledge on using the Internet was reflected as improved speed in Internet usage by two students, and for another student it was about awareness of number of useful sites, and for yet another student it was about learning how to search information in Google and creating a shared document.

Improved knowledge and skills to use the Internet was also reflected through the online test and multiple choice test that the students answered, which produced numerical data. The online test was done as a part of the third action research workshop and had eight multiple-choice questions. If the students knew the answer, they could choose the right option. If they did not know the answer, they could search for the information in the Internet and then choose the correct answer

from the options given. The online test was conducted using Google Forms.

Figure 7.6 below shows the questions that the students answered through the online test.

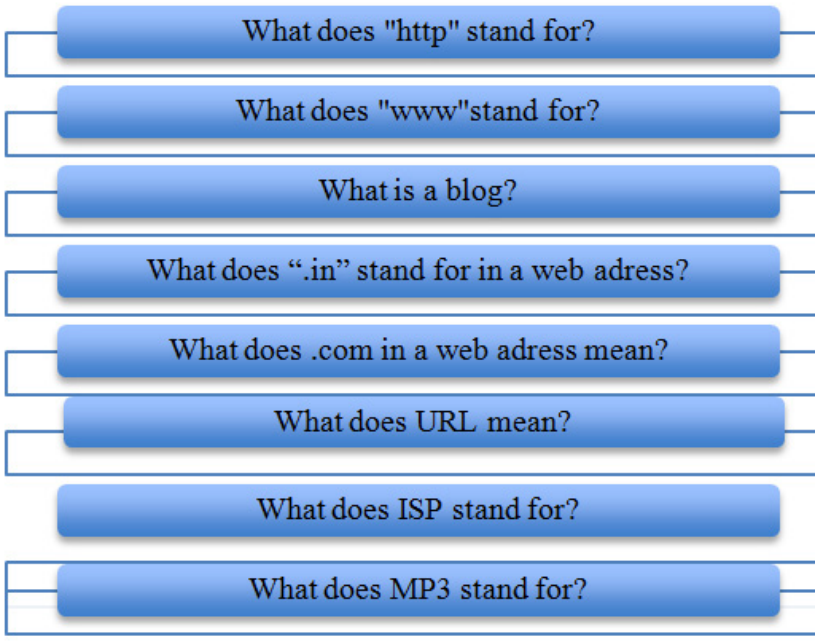

Figure 7.6. *Questions for the online test*

Six students got all the answers correct, Anuradha, Bindu, Hima, Lakshmi, Soumya and Deepa. Out of the eight questions, Reshma and Jasna answered seven questions correctly, and Tahira got six answers correct.

In the fourth workshop, a multiple choice test was distributed in paper where they were asked questions based on the tools and applications that had been introduced through the research. Soumya, Tahira, Mubeena and Deepa scored full points. Jasna and Anuradha got eight correct out of ten questions, while Saritha scored seven out of ten. Thus, both the aptitude test showed that the students gained knowledge on using the Internet, which helped in measuring knowledge in abstract terms.

Moreover, the knowledge level was also reflected in how much they knew about the tools introduced and what they had gained after the workshops and training.

Figure 7.7 shows the students' knowledge level before the workshops on the tools that were introduced for learning through the research. The vertical axis shows the number of students who answered the questionnaire. The horizontal axis shows the tools. Eight students answered the questionnaire.

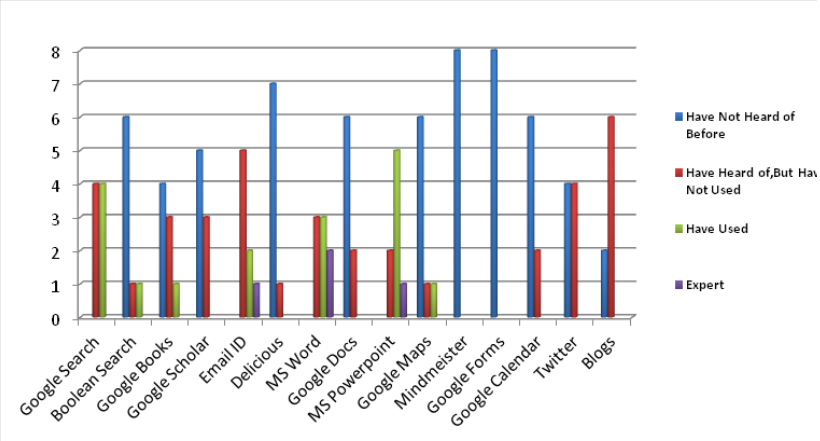

Figure 7.7 *Knowledge levels of the tools and applications before the training and workshops*

With respect to Google searches, four students said they had used Google and four said that they had heard of it but not used it. Six of the students had not heard of a Boolean search before, and one student said she had heard of it but not used before, and one said she has used it. Four students had not heard of Google Books, and three stated that they had heard of it but not used, and one said she has used it. Google Scholar was also unfamiliar to five students and three said that even though they had heard of it, they did not know how to use it. Five students said that they had heard of an email ID but not used it, which means they did not have an email account, while two said they had used an email ID, and one student identified herself as an expert in using email IDs. Seven of the students had not heard about the bookmarking site Delicious, while one said she had heard of it but did not use it. Three students did not use MS Word even though they had heard about it; another three said they had used MS Word and one stated that she was an expert.

Google Docs was unfamiliar to six of them, and two said even though they had heard about it they did not use it. There was no one in the group who had not heard of MS PowerPoint. Two said they had heard of it but did not use it, as they did not know how. Five said they had used it, and one stated she is an expert. Six of them stated that they had not heard of Google Maps, while one student said she did not use

it even though she had heard of it and another said she had used it. All eight students stated that they had not heard of Mindmeister and Google Forms. Six stated that they had not heard of Google Calendar, while two stated they had heard of it but did not know how to use it. Twitter was not familiar to four students, while the other four had heard of it but did not know how to use it. Two students had not heard of blogs before, and while the other six had heard of it, they did not know how to use it. These findings provided a clear picture of the students' familiarity with and usage level of the tools that they were introduced to. An overview of the knowledge levels before the intervention will illustrate how they have changed in terms of usage after the training and workshops.

Figure 7.8 shows the students' knowledge level of the tools learned after the workshops. The vertical axis shows the number of students and the horizontal axis shows the tools learned through the research. The total number of students who answered the questionnaire was eight students.

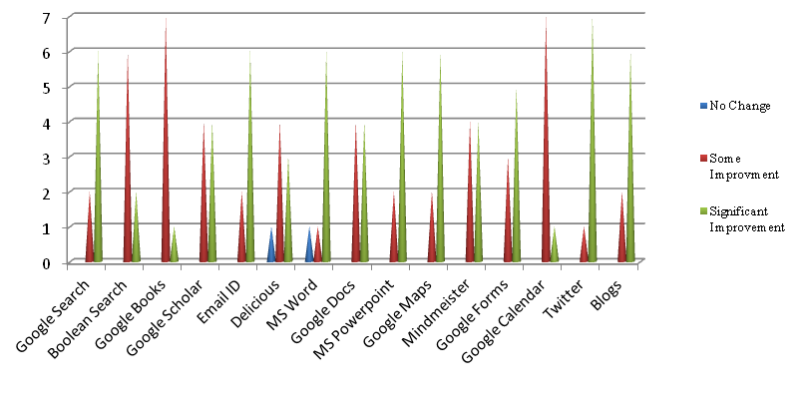

Figure 7.8 *Knowledge levels of the tools and applications after the training and workshops.*

Learning to use Google search, Email ID, Blogs, Google Maps and the non-Internet applications such as Word and PowerPoint brought significant improvement in the knowledge levels for six students after the training and workshops. Seven out of eight responding students reflected that they had gained a significant improvement in knowledge levels in learning to use Twitter. Seven of the students felt that there was only some improvement in their knowledge levels as regards Google Books and Google Calendar. The significant aspect is that only one student said there was no change in knowledge level in using Delicious and one who stated that using the Word application did not

bring any knowledge change for her. It was not expected that students could be made experts, but that they should know how to use the tools also after the workshops and training were completed.

Knowledge levels were also reflected through the empowerment indicator questionnaire that was given to students at the end of the workshops. In the questionnaire data, all nine responding students stated that their knowledge levels and skills had improved. The questionnaire was given to students again one and half year after the workshops and training were conducted through the research, and all the students stated that their knowledge and skills to use the Internet had increased.

These mixed tools were used in evaluating the knowledge and skills as an empowered outcome because, as reflected by Greene, a standardized achievement test can help in assessing the success of an educational program, while an interview or observation can help in understanding why the program was successful or unsuccessful (Greene et al., 1989). Similarly, as knowledge and skills were indicators of empowerment outcomes, the numerical data on their knowledge levels of the tools obtained through the online test, aptitude test and knowledge level questionnaire before and after the workshops helped in evaluating the knowledge and skills as an empowered outcome. The verbal statements, which produced textual data, helped in answering the "how" question of how they gained knowledge and skills in using the Internet.

The findings about how they have been empowered through knowledge and skills also validates that experience is an important factor which determines the Internet knowledge and skills, and people who spend more time online are likely to acquire more Internet knowledge and skills (Hargittai, 2003).

7.2.2 Reduced Technophobia

As discussed in Chapter 2, technophobia is avoidance of new technologies or computers by individuals mainly because of negative attitudes and anxiety (Brosnan, 1998). A person experiencing technophobia is characterized as someone who possesses high levels of computer-related anxiety, holds negative attitudes towards computers and avoids interaction with technology whenever possible (Brosnan & Lee, 1998). As discussed in Chapter 5, the analysis and findings in this research also showed that one of the reasons why the students stayed away from using the Internet was fear of using the Internet or technophobia. The main reason for the students' experience of technophobia was caused by computer-related anxiety that affected their learning. The students' statements and reflections did not indicate any negative attitudes towards computers or the Internet.

With the intervention of training and workshops, it was expected that students would experience that their technophobia was reduced, and this was one of the indicators that could be measured to indicate empowerment through learning to use and using the Internet. It was observed that reduced technophobia brought an empowering experience which was reflected in the brainstorming through sticky notes, through students' refection in action research workshops and through the empowerment indicator questionnaire which was administered during the final workshop and again after one and half years.

I will first discuss how the empowered outcomes through reduced technophobia were reflected in students' statements on the sticky notes on empowerment through Internet usage. This activity was undertaken in the third action research workshop as they had gained some experience with Internet usage by that time.

Figure 7.9 shows how students expressed their improved technophobia through the training and workshops through sticky notes.

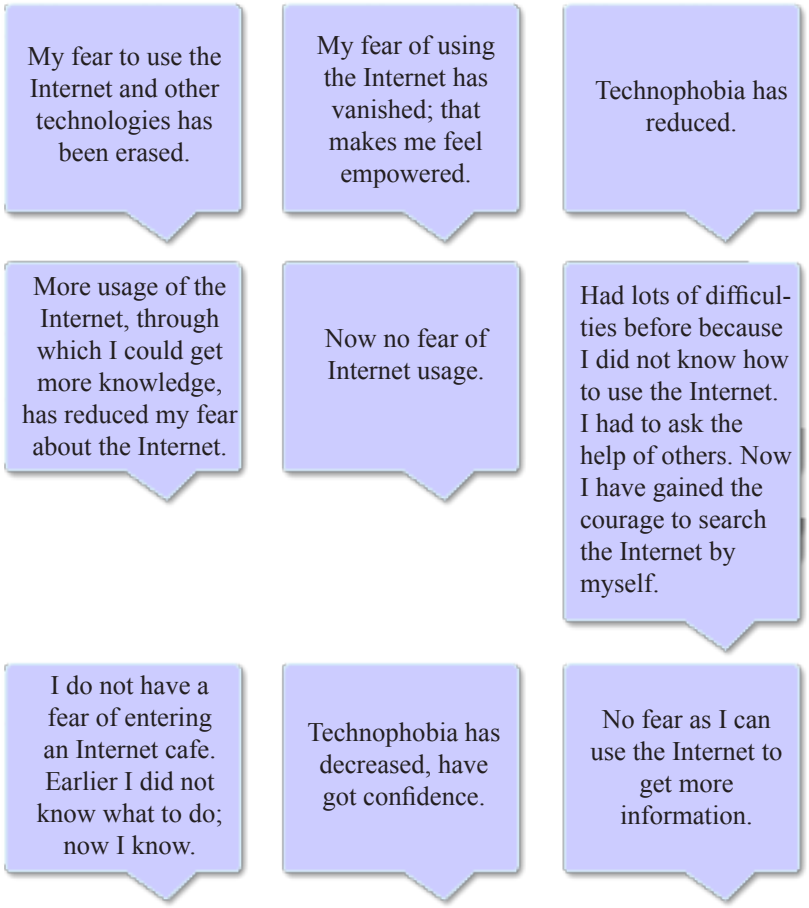

Figure 7.9. *Students refection on reduced technophobia through sticky notes*

Students' reflections show that for some technophobia or the fear of using the Internet has vanished, while for other students it has been reduced but they still have some anxieties about using the Internet. For one student her fear concerned entering an Internet café, which is also a significant element which has to be taken into account as accessing and using and the Internet is very much influenced by their attitudes towards visiting Internet cafés.

In the final workshop, when asked how they feel empowered through learning to use Internet through training and workshops, students also expressed reduced fear and technophobia.

Hima reflected in the fourth AR workshop that her fear had vanished: *"fear to use Internet has gone" (ARW4).*

Hima had no knowledge on ICT before and from my observations she suffered from high levels of technophobia and Internet anxiety in using the Internet. For Hima, her anxiety was not only about using the Internet but also concerned just sitting in front of the computer, which she had mentioned earlier (refer chapter 5). So when she says that her fear of using the Internet has gone, it also implies her technophobia of sitting in front of the computer also has reduced.

Reshma echoed what Hima had stated in the fourth AR workshop stating: *"no fear of using the Internet…I believe that I can use the Internet"(ARW4).*

Reshma's reflections also illustrate that change happens through beliefs; she explained that now she has faith in herself that she is able to use the Internet and her technophobia has gone in terms of Internet usage. She had very little knowledge on ICTs before the intervention and her reduced technophobia through the training and workshops also vouches her belief that she is able to use the Internet.

In the fourth AR workshop Tahira not only reflected on the element of reduced technophobia for using Internet but also included that her fear of visiting an Internet café had reduced.

"I have never gone alone to a public center [Internet café]. I have not used the Internet alone… was doubtful if I could. I had only little knowledge about the Internet, but still had a fear of using it and had confusions. Now that has changed… I have that confidence and my fear has reduced" (ARW4).

Tahira also reflected on her improved confidence in visiting an Internet café in an informal interview in 2012:

"I do feel transformed and I can feel a big change in myself being an Internet user and feel a sense of belonging to the digital world. Even though I have done a course before the change in myself as an Internet user is greater after I attended the workshops. A stage has now come that without computers and Internet, I cannot do anything; now I can be a 'helper' to others also. My confidence has increased in using the Internet cafés and now I use more often" (SR12).

For Tahira, her perception of reduced technophobia was also expressed in terms of her visit to Internet café. She experienced high anxiety levels in using the Internet earlier, and she also doubted her capabilities to use the Internet even though she had taken a private

computer course previously.

Bindu also mentioned her reduced technophobia to use the Internet after one and half years from the time the training and workshops were given. She reflected in the informal interview in 2012 that "what I feel is also the fact that my fear to use the Internet has reduced."

Anuradha also mentioned in the informal interview in 2012:

"I feel that the training and workshops have helped me a lot in the way I am using the Internet now. I also feel that I do not experience the fear which I had earlier when I thought of and wanted to use the Internet"(SR12).

At the end of the workshops, an empowerment indicator questionnaire was administered to the students. Out of the nine responding students, five of the students said that they do not experience any fear of using Internet any more, while four of them said that their fear had reduced. When the empowerment indicator questionnaire was given to students again one and half years from the time of the completion of the research workshops in 2012, out of the nine responding students, five of the students said that their technophobia had vanished, while the other four said that it had been reduced. Thus, gaining knowledge and skills and more experience through the Internet training and workshops reduced the students' technophobia, which was characterized by high anxiety levels in using the computer and the Internet. The students' statements thus validate that the more opportunity to work with computers and the Internet, the more computer and Internet related anxiety will decrease (Chou, 2003; Farina et al., 1991). The research also supports that providing supportive environment and resources can decrease Internet anxiety (Thatcher et al., 2007).

Internet anxiety, which characterized technophobia for the students in this research context, is influenced by the Internet usage experience as stated in the literature (Joiner, Brosnan, Duffield, Gavin, & Maras, 2007). As the students have positive attitudes towards the Internet, and they value the Internet and perceive it to be useful, it can motivate them to spend more time using the Internet and improve their Internet usage experience. For those students whose technophobia or fear had not fully disappeared but had been reduced, the more they experience using the Internet, the more their technophobia or fear will also be reduced.

7.2.3 Improved Internet Self-Efficacy

As discussed in the theoretical chapter, Internet self-efficacy "is a user's perception about his/her own ability in using the Internet" (Tsai & Tsai, 2003, p. 48). Internet self-efficacy is essential to overcome the fear or technophobia of novice users (Eastin & LaRose, 2000), and holds much relevance for persons who may not be using Internet but are interested in doing so (Savolainen, 2002). The students who were novice users faced the barrier of low self-efficacy in using the Internet. The students did not state explicitly that low self-efficacy was a barrier for their Internet usage; however, I observed that they had low confidence levels in using the Internet. It was expected since most of them experienced technophobia and lacked knowledge and skills to use the Internet. Self-efficacy was a significant indicator of empowerment for the students in the research because it will influence their future Internet usage as will the other empowerment indicators such as improved networked knowledge, and reduced technophobia because, as stated in the literature, individuals who are confident of their capabilities to use the Internet are more likely to use it frequently (Cheong, 2007; Partridge, 2007). In addition, as indicated in the theoretical chapter, Internet self-efficacy is useful in situations where there is a gap between the potential of the Internet and its actual use (Torkzadeh & van Dyke, 2001), and the situation in this research was similar as the students did not take advantage of the existing Internet facilities even though they were interested in using the Internet. When students develop self-efficacy beliefs about Internet skills and their capability to use the Internet, their motivation to use the Internet in future will be improved even in constrained situations. For the students in the research, the self-efficacy beliefs were about their ability to use the Internet, through which they felt empowered, which was reflected in student statements, sticky notes and questionnaire data. Mixed methods was again used with the intention of complementarity so as one method type was used to enhance and illustrate the results from the other (Caracelli & Greene, 1993).

Firstly, I will discuss the students' efficacy beliefs in their ability of searching for information on the Internet as reflected as an empowered outcome in the action research workshops.

Mubeena perceived her ability to use the Internet in future to be sufficient even though she was not successful with the Internet activities in the second AR workshop:

"Even though I did wrong today, I know how to do it and feel confident that I can do it better in future"(ARW2).

Self-efficacy has positive and indirect impact on Internet usage about the beliefs concerning perceived usefulness of the Internet (Ramayah et al., 2003). This can explain why Mubeena, even though she did not have a fruitful Internet search, perceived that she will be able to succeed in using the Internet in future. Mubeena's reflection also validates what is stated in the literature that when individuals are empowered they can develop a "can do" attitude irrespective of favorable outcomes (Conger & Kanungo, 1988).

Bindu and Reshma expressed their perceived ability to use the Internet as follows:

Bindu's confidence was reflected in the second AR workshop: *"I did not even know how to search. But I am bit confused still on how to take printouts. But I do feel a change after the training and workshops. I know how to search. If I get a seminar topic, I know how to go to the Internet and search for information"(ARW2).*

Reshma expressed in the fourth AR workshop: "*I can see that a lot of improvement has happened… like before I never knew anything. Now I believe myself that I can do searching…and have the confidence that I can go and look for things in the Internet…like going to a website and all"(ARW4).*

For Reshma, who did not have any prior knowledge of using the Internet, her efficacy beliefs concerned going to an Internet and searching for information from websites. Bindu also gained confidence and expressed that now she knows how to search. Reshma and Bindu's statements thus show improved Internet efficacy when they talk about their ability to take information from the Internet.

Deepa stated in the fourth AR workshop: *"confidence levels have increased in using the Internet for sure"(ARW4).*

Deepa, who had sufficient knowledge and a computer with Internet connection at home, also expressed improved efficacy beliefs in her ability to use the Internet through the training and workshops.

What Reshma, Bindu and Deepa's statements reflect, is in line with the literature that improved Internet self-efficacy leads to better Internet usage (Tsai & Tsai, 2003, p. 48).

For Tahira, Jasna and Hima, efficacy beliefs were not only about Internet usage but also about their confidence in going to an Internet café. In the fourth AR workshop, they expressed as follows:

Tahira: "*Now I can go alone to an Internet café. I have the confidence that I can do [a search] and get information. The training and workshops have helped me a lot"(ARW4).*

Jasna: *"A lot of improvement has happened. Like going to an Internet café. I can search. I can take copies [printouts]… I can do everything"(ARW4).*

Hima: *"I knew only Word… after the training and workshops, I have the confidence now to use the Internet… now I can search without much trouble… we went to the Internet café the other day to do Internet searches" (ARW4).*

The statements by these three students shows the influence of socio-cultural factors that also affect self-efficacy beliefs in using the Internet, which is not reflected in the literature to the best of my knowledge. Tahira, Jasna and Hima had to rely on public Internet cafés for using the Internet like most of the other students in the research. For these students, the self-efficacy beliefs they held about their capability to use Internet also included their perception of their ability about entering an Internet café.

Figure 7.10 shows how students expressed their self-efficacy beliefs through sticky notes in the third action research workshop when they were asked how they felt empowered through learning to use the Internet.

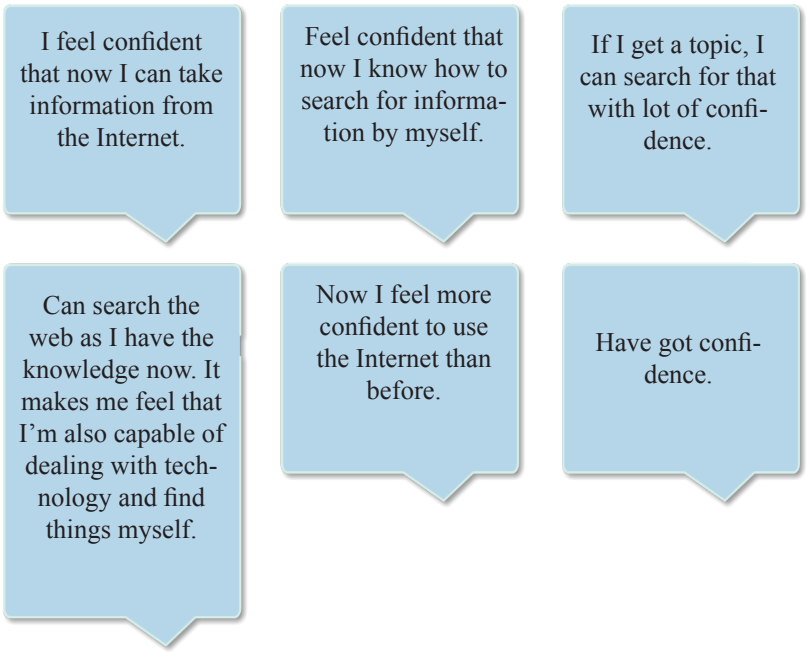

Figure 7.10. *Students refection on improved Internet self-efficacy through sticky notes*

Students expressed their improved confidence levels through sticky notes mainly on taking information from the Internet. Improved confidence levels were also reflected in numerical data through the empowerment indicator questionnaire. All nine responding students stated that they experienced improved confidence in using the Internet. Six of the students experienced a high level of confidence with tremendous improvement, while the other three stated that they do feel confident but not on a higher level. I also wanted to know how the Internet training and workshops had influenced their confidence levels in visiting an Internet café. Responding to this specific question five students said their confidence level to visit an Internet café had improved tremendously, three said they felt somewhat more confident, and one student stated no change. This student was Deepa, who had a computer and Internet connection at home and also had used Internet cafés earlier. Thus, the findings reveal that students' efficacy beliefs in performing Internet activities have been improved through the training and workshops. The training and workshops increased their self-efficacy beliefs of being more capable to use the Internet than before. The students felt confident in searching and finding information on the web. This finding is in line with what is stated in the literature that improved Internet usage does influence Internet efficacy (Eastin & LaRose, 2000; Tella, 2011). The research also validates what is stated

in the literature that appropriate training and more Internet experience improve the Internet self-efficacy beliefs of persons (Durndell & Haag, 2002; Liang & Tsai, 2008; Tsai & Tsai, 2003, p. 48). One new dimension to Internet self-efficacy for a woman in a developing context also concerns her efficacy beliefs of using a public Internet café or a public center of access.

7.2.4 Increased Motivation

Motivation is another empowerment indicator which was not developed from the students' responses as it was not stated as a barrier for their Internet usage in the future workshop (Refer Chapter 4). Motivation was observed to be an indicator during discussions with the students in the future workshop on what the empowered outcomes for them through learning to use the Internet could be. The argument for using motivation as an empowerment indicator is that the indicators of empowerment which the students are expected to gain through improved knowledge and skills, reduced technophobia and improved Internet self-efficacy will bring value to their life if they are motivated to use the Internet. As discussed in Chapter 2, the theoretical underpinning for explaining students' motivation to use the Internet in this research context is Albert Bandura's expectancy-value theory (Bandura, 1991, 1994) and the perceived usefulness and perceived ease of use of the Technology Acceptance Model (TAM) by Davis (1989).

Figure 7.11 shows students reflection through sticky notes on motivation to use the Internet more as they learned more about the Internet. For the students, as they were novice users and learning to use Internet was a new experience, the motivation to learn was in the form of a desire to learn more about the Internet. Moreover, I could also observe an increased urge in them to use the Internet as the days passed by.

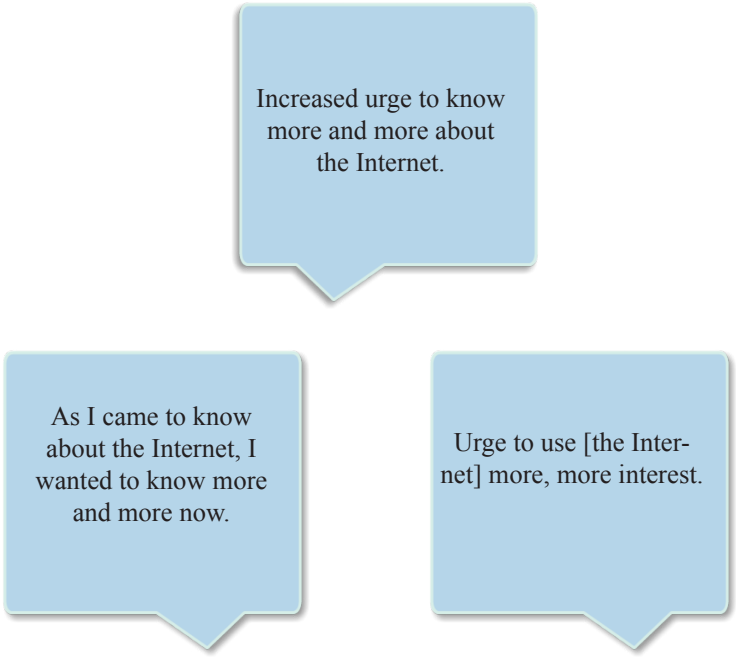

Figure 7.11. *Students refection on improved motivation through sticky notes*

Motivation to use the Internet in future was also stated by the students through the empowerment indicator questionnaire. All nine responding students stated that they feel motivated to use the Internet in future. When the students were asked again in 2012, the nine students again responded that they felt motivated to use the Internet.

As discussed in Chapter 2, Bandura (1991) argues that "future events cannot be causes of current motivation or action, but by cognitive representation in the present, conceived future events are converted into current motivators and behavior" (Bandura, 1991, p. 71). The motivating influence of expectancies is partly governed by self-beliefs of efficacy, as people act on their belief of what they can do and what the expected outcomes from their actions are. This is applicable when it comes to use of technology, because individuals will use the technology when they believe that it will result in favorable outcomes. According to the TAM model, a person will use technology based on perceived usefulness, which is the degree to which a person believes that using a particular system would enhance his or her job performance, and also perceived ease of use if they believe that the technology is going to bring value to their lives and its usage is also less cumbersome (Davis, 1989). As regards using the Internet, the motivational variable of perceived usefulness and perceived ease of use is also a significant

factor to consider, as it determines the motivation to use the Internet for the students in this research context. The motivation for the students to use the Internet is based on their efficacy beliefs that by using the Internet they can get the desired outcomes that can bring value to their lives and also their belief that it is easy to use the Internet.

An individual's usage of technology is also based on perceived ease of use, which refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Some authors claim that perceived ease of use does not influence the motivational behavior to use the Internet as much as the perceived usefulness (Lee, Cheung, & Chen, 2005; Ramayah et al., 2003). However, for the students in this research, their motivation was also observed to be based on the perceived ease of use. This is due to the fact that even though individuals believe that a technology is useful, a belief that the system is too hard to use might become determinable for their technology usage (Davis, 1989). This was also observed in the research, where the students perceived the Internet to bring value to their lives, still the ease of using the Internet was a factor which influenced their future usage, mainly because most of them were novice users in learning to use the Internet. I observed that most of the students experienced difficulties as regards typing speed and struggled to navigate due to lack of proper control over the mouse. The students reflected on their experiences through the training and workshops as regards ease of using the Internet in the following ways:

Saritha expressed in the second AR workshop that *"it was not that easy for me… and typing speed was also low. But now I can do it without much trouble" (ARW2).*

Anuradha and Jasna reflected in the fourth AR workshop:

Anuradha: "*I had difficulties with holding the mouse properly…I am telling you this openly… now I can hold it properly and it's better…. and coming to speed. I had lots of difficulties. It was low. It's not that I have high speed … but I have improved…. now I can type a bit faster"(ARW4).*

Jasna: *"Earlier I did not know anything… like… I even did not know how to hold a mouse properly… now I can handle a mouse properly… I know how to type…but typing is still a problem … but compared to before I can say there has been lot of improvement… earlier it was difficult typing my name even"(ARW4).*

For Saritha, Anuradha and Jasna their motivation is based not only

on how they perceive their Internet usage in future bringing expected outcomes, but also based on how they perceive the ease of use in terms of searching, evaluating and retrieving the correct information by improved typing speed and their ability to control the mouse properly. Thus, perceived ease of use is a significant factor to consider as it determines the motivation to use Internet for the students who are novice users in this research context.

Figure 7.12 below illustrates how the students' motivation to use the Internet in future is based on their beliefs of Internet-self efficacy.

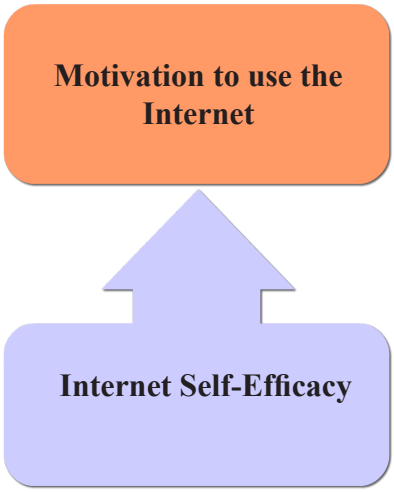

Figure 7.12. *Motivation to use the Internet influenced by Internet self-efficacy*

After the intervention, students showed higher confidence levels in using the Internet, which explains that increased efficacy beliefs influenced their motivation levels to use the Internet and thus brought empowered outcomes through increased motivation to use the Internet. Self-beliefs of Internet efficacy thus influence the motivation to use the Internet in future for the students, because they were motivated to use the Internet because of the belief that Internet usage will result in favorable outcomes in terms of getting the required information. This validates what is stated in the literature that the outcome expectancies of Internet use are influenced by increased levels of self-efficacy (Coffin & MacIntyre, 1999; Eastin & LaRose, 2000). Individuals with higher confidence levels or who have higher efficacy believe in using the Internet have been observed to have higher motivation to use the Internet (Liang & Wu, 2010). As discussed earlier, students' empowerment through increased Internet self-efficacy was both observed and measured. Motivational outcomes were also influenced by their perceived ease of use in terms of how effortless they experienced the Internet usage.

7.3 Empowered Outcomes Portrayed through Participant-Produced Drawings

Drawing was used as a data collection method in the fourth workshop. The main intention of using participant produced drawings was that "[d]rawing as a research method can provide a powerful lens into the learner experience" (Bishop, 2006, p. 35). The method provided the possibility for the students with a different cognitive thought of how they feel empowered through Internet usage using another medium of communication apart from the verbal statements. Figure 7.13 shows one of the group engaged in producing a drawing portraying imagination.

In addition, another motivation to use this method, as indicated in the research design chapter, was that some of the students were shy and somewhat reserved and not confident enough in expressing their ideas verbally, in spite of the fact that the discussions were in a local language. Drawings provided an alternative medium for the students who lacked confidence to express themselves (Bishop, 2006; Yuen, 2004).

Figure 7.13. *Students using drawing as a tool to describe empowerment*

Yuen (2004) states that use of drawing as a visual method in any research should be guided by the research question, and in this research, drawing was based on the research question of how the students felt empowered through learning to use Internet. The analysis of the drawings was done based on the participants' interpretation of the meanings of the drawings (Guillemin, 2004), and thus based on how the students view themselves being empowered through learning to use Internet.

As discussed in the research design chapter, the cognitive process the participants use when they are asked to draw is different from when they are asked to verbalize or write about their change experience (Kearney & Hyle, 2004). Since the change was in the form of empowerment, which is a complex experience to interpret, drawing was an excellent method to help me learn their interpretations and mindsets with a different thought process apart from the verbal and predictable statements through interviews and questionnaires.

Only eight students attended the fourth workshop, as it was public

holiday because of a Hindu national festival. The students were divided into two groups and were asked to discuss and come up with a visual narrative of how they experienced empowerment through learning to use Internet. I will first explain how they described empowerment through drawing, and then I will interpret the drawings.

Description of the Drawing Produced by Group 1: The first group used a tree as a metaphor in their drawing to portray how they were empowered through learning to use the Internet. They visualized their experience of being empowered in the form of different stages of a tree's growth, and this drawing reflects what is also stated in the literature that the open-ended nature of drawing provides the participants with a wide range of possibilities to express their thoughts (Bishop, 2006), which I have reflected on in Chapter 6.

Figure 7.14 shows how the first group used a tree as a metaphor in their drawing to portray how they were empowered through learning to use the Internet.

Figure 7.14. *Tree used as a metaphor in the drawing by group one*

Their first drawing was a tree through which they are epitomizing their visualization before the training and workshops. The tree is shown as growing in the soil of "ignorance". Students depicted their low confidence levels or Internet efficacy in using the Internet as the tree trunk. The students experienced low confidence levels in using the Internet, which was the result of their lack of skills and knowledge to use the Internet. This is what they have conveyed through the visualization that because the tree is cultivated in the soil of ignorance, it grows into a tree with low confidence levels. Another element portrayed was the sun representing fear, which was represented in the form of fierce sun rays which hinders the tree's growth.

Figure 7.15 shows how in the same chart they drew another tree, which represented what happens to the tree when it gets sufficient resources. The students' depiction of how they see themselves developing through the training and workshops is reflected by this metaphor.

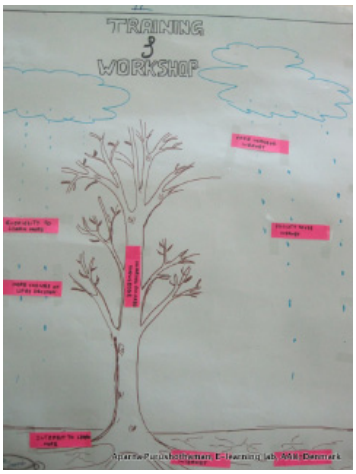

Figure 7.15. *Illustration of the trees growth symbolizing training and workshops*

Figure 7.16 shows the tree that represents the time during training and workshops grows in a soil of urge to use the Internet, guidance, practice and motivation. By learning to use the Internet, the students were provided opportunities to make use of the abundant resources of information that can make them competent in the information age. Students reflected on this through the showers that the tree received.

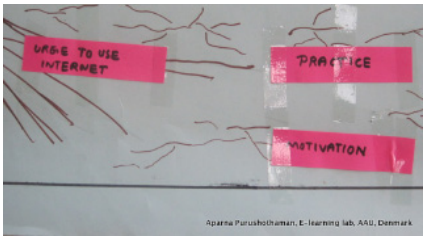

Figure 7.16. *Opportunities for practice and improved motivation symbolized through soil*

Figure 7.17 shows how showers were represented as "curiosity to learn more" and having more choices to make life decisions through learning to use Internet.

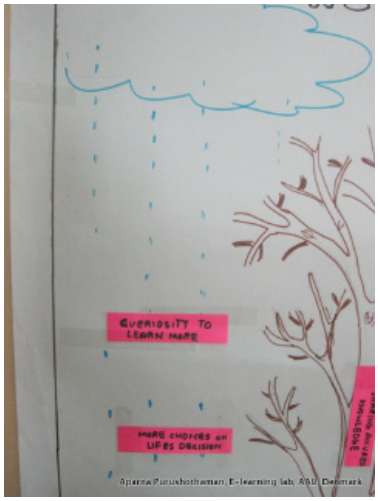

Figure 7.17. *Showers represented as curiosity to learn more and gaining more choices to make decisions in life*

Figure 7.18 displays how the manure was visualized as the various tools and applications they had learned such as Google search, Delicious, Google Books, Google Docs, Mindmeister, Google Maps, Google Scholar, blogging, and Twitter.

Figure 7.18. *Tools and applications learned symbolized as manure*

Figure 7.19 shows the students portrayal of a blossomed and fully grown tree which represented their empowerment after the training which signified:

- Self confidence
- Increased knowledge
- Reduced ignorance
- Reduced fear
- Changes in ideas and attitudes
- Improved social awareness

Figure 7.19. *Fully blossomed tree portraying empowerment*

The students have conveyed through the drawing how they have become empowered through

learning to use Internet visualizing them as a tree. This participant produced drawing by the first group helped in getting the students' different perceptions of how they became empowered, and it also illustrates what is stated in the literature that this technique discourages the use of common and predictable phrases which other data collection technique may provide (Nossiter & Biberman, 1990).

Description of the Drawings Produced by Group 2

The drawing by the second group was a perfect example that drawing provided a structured process through which the students could describe their experiences, as reflected in the literature (Yuen, 2004).

Figure 7.20 shows how the second group represented their thoughts in the form of a story of a girl and her experience of change with the training and workshops. The second group's drawings clearly illustrate that all the events, experiences, and interactions that the participants experienced before the drawing work together to produce the understandings that are embedded in the drawing, as stated in the literature (Guillemin, 2004).

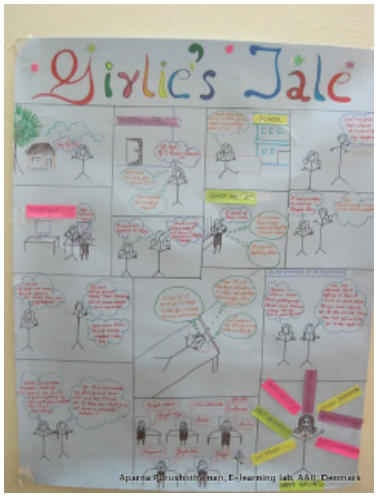

Figure 7.20. *Drawings produced by group two describing empowerment*

Figure 7.21 shows how the story begins by picturing a girl who is in doubt or fears entering a public Internet café.

Figure 7.21. *Technophobia visualized*

Figure 7.22 shows how the main character is thinking whether her father would allow her go to an Internet café and what other people and the society would think if she were to go alone.

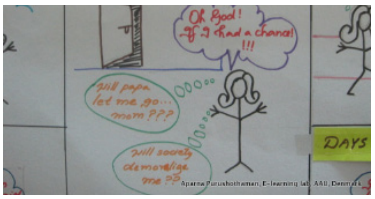

Figure 7.22. *Gendered roles influencing Internet usage visualized.*

Figure 7.23 is the pictorial representation of the students illustrating how the intervention started when the researcher comes and says that she can give Internet classes in the Internet café. When the training begins, she tells the researcher that she is afraid to use the Internet.

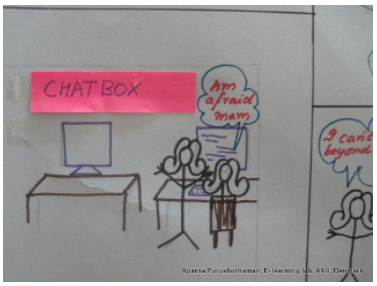

Figure 7.23. *Girl portrayed having fear.*

Figure 7.24 shows the part of the drawing that portrays psychological elements which the girl develops during the course of the training like urge to learn more which makes her want to explore the Internet, and also her improved Internet self efficacy beliefs that she can search the Internet faster.

Figure 7.24. *Girl visualized gaining motivation.*

Figure 7.25 portrays the doubts which the girl has about the tools which she is learning through the training, and the researcher is shown reassuring the girl that they can manage it in the next class.

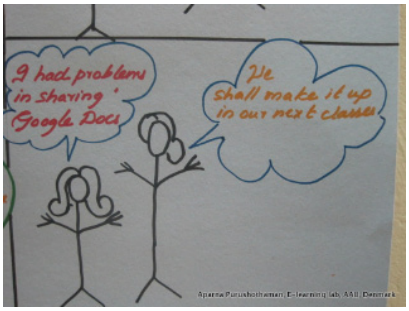

Figure 7.25. *Supportive environment in the training portrayed.*

Figure 7.26 again shows how the girl's increased efficacy beliefs and being motivated by the researcher that she is doing great in using the Internet is shown in the next frame of the drawings.

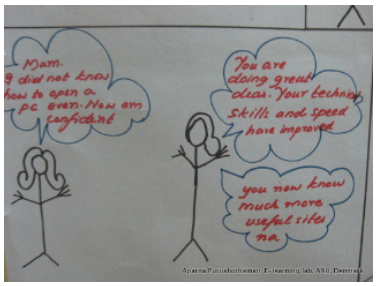

Figure 7.26. *Increased Internet self-efficacy shown in the drawing.*

Figure 7.27 illustrates how in the next frame of the drawings girl is visualized as lying in bed thinking that she can be the best student in her class by getting knowledge from the Internet; she thinks that she can submit her assignments skillfully, but she has some concerns regarding that if she ends up visiting bad and harmful sites, her parents might scold her.

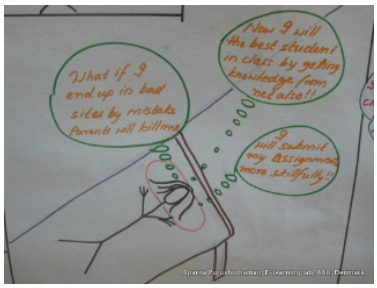

Figure 7.27. *Girl's thoughts of the positives and negatives of the Internet.*

Figure 7.28 is about how the girl is shown sharing her experiences with another girl whose parents cannot afford to provide an Internet connection, but she wants to use. The girl is asking the one who gets training whether she was afraid of going to the Internet café. The various tools and applications that they learned to use in the training sessions and action research workshops are show in the next frames.

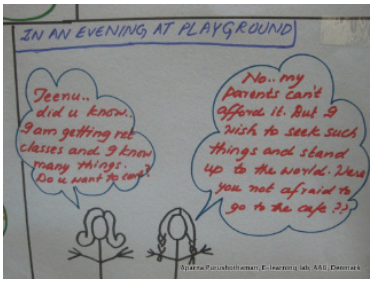

Figure 7.28. *Effectiveness of training again shown differently as sharing with the friend*

Figure 7.29 shows how the various tools and applications that they learned to use in the training sessions and action research workshops are show in the next frames.

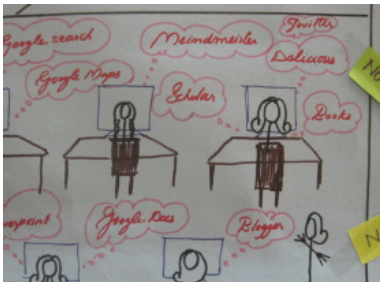

Figure 7.29. *Visualization of skills gained through training.*

Figure 7:30 shows how the story portrayed through drawings ends with a "Happy Girlie" who is empowered through:

- More confidence
- More knowledge
- Being emancipated
- Having more skills
- Not being ignorant
- Experiencing no fear
- Happy digital native!

Figure 7.30. *The main character in the story shown as empowered.*

7.3.1 Interpreting the Drawings

In both group drawings, the students showed what their situation was before the training and workshops and why they had stayed away from using the Internet.

Knowledge level, psychological and socio-cultural factors which influenced their Internet usage before the training and workshops: The first group reflected on lack of skills and knowledge to use Internet in their representation of the tree as a metaphor growing in the soil of ignorance. This reinstates what is indicated in the literature that lack of skills and knowledge to use the Internet is a significant factor which contributes to digital divide(Hargittai, 2003; van Deursen & van Dijk, 2010a).

In the first drawing, low Internet efficacy, that is, low confidence levels in using the Internet, was also expressed. This was depicted as the tree trunk, which grows in the soil of ignorance by which they explain that their low Internet efficacy is caused by their ignorance or lack of knowledge and skills in using the Internet. This portrayal of low confidence levels also validates what is stated in some of the studies in the literature on behavioral usage of Internet that woman have low self-efficacy and confidence levels when it comes to Internet usage (Cheong, 2007; Durndell & Haag, 2002; Jackson et al., 2001; Liaw, 2002; Schumacher & Morahan-Martin, 2001; Shashaani & Khalili, 2001; Tsai et al., 2001).

Both the groups portrayed an element of technophobia or fear in using

the Internet through their drawings. While the first group illustrated it as intense rays of the sun which was inhibiting the tree's growth, the second group had a more detailed illustration of the element of technophobia. Their story of the experience of the main character in their drawings begins with the girl fearing to go to an Internet café, and it is also shown when the main character shares her Internet learning experience with her friend, and the friend asks whether she is not afraid of visiting an Internet café. This is also an important aspect that needs to be considered while training women users, because the technophobia of using Internet here is influenced by her fear of entering an Internet café. Fear is again reflected in the drawing when the main character is telling the researcher that she is afraid of using the Internet in the training sessions. As discussed earlier, the students' technophobia was characterized by anxiety levels and not by negative attitudes towards the Internet. Their visualization of fear illustrates that one of the reasons why women tend to stay away from using the Internet is fear, which also reinstates the fact that women tend to show higher levels of discomfort with the Internet and that they show more Internet anxiety as shown in some of the studies on the behavioral usage of Internet in the literature (Jackson et al., 2001; Schumacher & Morahan-Martin, 2001; Tsai et al., 2001).

In the second group's drawings the socio-cultural aspects which influence Internet usage because of gendered role definitions can also be seen. The main character is depicted doubting whether her father will allow her to visit an Internet café, and when she shares her experiences with another friend, she also tells her that she needs to persuade her parents. The students' access to the Internet is influenced by the gendered role definitions of being a woman and that visiting a public Internet café is influenced by parental consent. This shows that gender, as a structuring category of social life, affects access to the Internet (Kennedy et al., 2003).

Signifying Training and Action Research Workshops: Another noteworthy component that both the drawings reflected was how imperative training programs are for the empowerment of women through using the Internet in developing countries. Providing training in basic computer literacy skills and access to information via the Internet is essential in capacity building and empowerment of women through the Internet, as has also been stressed in the literature (UN, 2005a), and the students' representation of the training through the drawings substantiate this. The research provided Internet training for the students based on Bloom's Taxonomy of Learning Domains, and action research workshops was conducted based on the what they had learned in the preceding training session. The students visualized how the training and action research workshops facilitated empowerment for them.

The first groups' drawing portrays how the tree grows when it gets resources and a conducive environment to grow, which is the representation of training and action research workshop. They depicted the soil in which the grows in the form of guidance and practice to use the Internet providing conducive environment for the tree to grow, and practice means having the opportunities to practice or perform Internet activities provided. The various tools and applications they had learned through the training programs was represented as manure, which facilitates the trees growth. The effect of the training and workshops is shown in the form of the leaves blossoming. Similarly, in the second group's drawings, apart from the significance of training, the role played by the researcher in bringing the confidence levels up and how the main character is motivated by the researcher were also depicted in the drawings. The main character in the drawing is visualized telling her friend that the training is free, students are welcome to ask anything, and that the researcher will also make her more feel confident as she is now.

Both groups' drawings portrayed that the training and workshops brought an urge to learn more about the Internet in the students. In the first group's drawing, curiosity to learn more was visualized as showers, which facilitate the tree's growth, and also the tree is depicted growing in the soil, which represents the urge to use the Internet through the training and workshops. In the second group's drawing, this curiosity was reflected as how the main character "girlie" develops the urge to learn more and how she wants to explore the Internet more during the course of the training.

The first group's visualization of how they see themselves as a tree that changes through training and workshops, and the second group's drawings of the impact of training, which they visualized through the girl's story, clearly indicate the significance of the role of training in empowering the students through using the Internet and also validates what is stated in the literature that for the successful usage of any ICT, training plays a crucial role (World Bank, 2012). When the users of ICT are women, the training programs also has to be gender sensitive, as is also mentioned in the literature (Reddi & Sinha, 2004). Both the drawings showed that learning to use various tools through the Internet during training and workshops and receiving a favorable environment for learning with guidance and practice through a woman trainer brought empowered outcomes for the students.

Empowered Outcomes Visualized through the drawings: In both the drawings, empowerment through the Internet was illustrated through various parameters. In the first group's drawing, the students em-

ployed a fully blossomed tree as a metaphor for portraying empowerment through increased confidence; and in the second group's drawing, it was the empowered girl who had gained confidence in using the Internet. The indicator of self-confidence showing empowerment is consistent with what is stated in the literature that Internet efficacy plays a major role in the Internet usage of novice users and is also determinal in closing the digital divide (Eastin & LaRose, 2000). It also shows that Internet experience is important for improved Internet efficacy (Liang & Tsai, 2008).

Empowerment was also visualized through improved knowledge levels and skills. In the first group's drawing, the "empowered tree" represented improved knowledge and reduced ignorance. The tree also depicted improved social awareness, which is also a pointer of improved knowledge levels. By gaining skills to use Internet, they can access information which leads to more awareness about their society. In the second group's drawing, improved knowledge levels were portrayed through the thoughts of a girl thinking that she could be the best student in the class because she can find information on the Internet through the knowledge gained in the training sessions. The second group's drawings also showed the girl being empowered through more knowledge, more skills and reduced ignorance through learning to use the Internet in the training and action research workshops. This also indicates that Internet experience will increase the knowledge levels and online skills of the users (Hargittai, 2002; Schumacher & Morahan-Martin, 2001).

The illustrations of the tree, which represents empowerment through reduced fear in the first group's drawings, and the girl, who is empowered with no fear in the second group's drawings, indicate the significance of fear and technophobia for Internet usage of novice users. This also shows that more Internet experience can reduce Internet anxiety, as reflected in the literature (Chou, 2003; Joiner et al., 2007), which also characterized technophobia for the students in this research. Another element which the tree represented in the first group's drawings was changes in ideas and attitudes, implying that they felt empowered through the changes in ideas and attitudes towards the Internet. Not that the students had negative attitudes before the intervention, but that they now have more favorable attitudes. This again is due to Internet experience, because when individuals have more web experience, they gain more positive attitudes towards the web (Liaw, 2002; Tsai et al., 2001).

In the second group's drawing, one of the elements through which the main character was shown becoming empowered was through

being emancipated. This indicates that the emancipatory aims of this research, with action research as a methodology, did empower the students through learning to use the Internet. "Action research is emancipatory as it is designed to improve the researched subjects' capacities to solve problems, develop skills (including professional skills), increase their chances of self-determination, and to have more influence on the functioning and decision-making processes of organizations and institutions from the context in which they act" (Boog, 2003, p. 423). The students in the second group by signifying the element of emancipation believed that they became emancipated through the newly acquired human, social and psychological competencies to use the Internet.

The focus of this research was indeed to develop the Internet usage skills of the woman students and make them aware of the possibilities as well as the constraints which inhibits their usage. It was aimed at reducing the students' technophobia, and thus assisting them in becoming more confident so that they would be motivated to use the Internet. Being empowered through emancipation was also indirectly reflected in the drawings of the first group. In the metaphor of showers, the students had reflected that now they have more choices to make life decisions. This means that they felt emancipated through learning to use the Internet, which opens the unlimited resources of knowledge that are easily available online, and this will give them the opportunity to make other life decisions.

Another distinct element, which the second group reflected on, was portraying the girl as a digital native. This means that the empowerment that they had experienced allowed them to identify themselves with a digital native. Digital natives are individuals who were born between 1980 and 1994 and have been characterized by their familiarity with the reliance on ICTs (Kennedy, Judd, Churchward, Gray, & Krause, 2008, p. 4). Through getting familiarized with the Internet, the students thus gained a sense of belonging to this group of digital natives, and that makes them feel empowered as they are also born in the same era. Thus, drawings as an artifact helped the students to express powerful emotions about their empowering experiences through learning to use the Internet, as mentioned in the literature (Prosser, 2011). The literature states that a integrated approach of the visual method of drawings and verbal statements through questionnaires and interviews offers a way of exploring the complexity and multiplicity of the experience which is investigated (Guillemin, 2004). In this research also the integrated approach of the using drawings along with the text from the verbal statements helped me to better analyze, the complex phenomenon of empowerment experienced by the students.

7.4 Opportunity Structure

Opportunity structure is defined as the formal and informal context within which an actor operates (Alsop & Heinsohn, 2005). It includes the formal and informal institutions as well the norms governing people's behavior. The opportunity structure determines the effect of agency, which is an actor's ability to make meaningful choices (empowered outcomes). In the research, the main factor to be considered is the opportunity structure in the form of availability of the Internet. The formal institutions, such as the university and the government, both facilitated a favorable environment for the students to use the Internet to some extent. The country did not have any laws and regulations that restricted the women's access to technology. As discussed in Chapter 1 and 5, the Government of India, realizing the potential of ICT, made a budget allocation of US$ 102 million in 2008 to 2009 for the National Mission on Education through ICT (NME-ICT, 2009). However, the level of thrust, directions and guidelines influences the implementation and success of the mission (Snehi, 2009), and this indirectly influenced the Internet usage of the woman students. The university did favor technology and provided scope for the Internet usage. At the time of the intervention the department had only two computers with Internet connection, which the students were not allowed to use. However, when I visited the department a year and a half year later, the department had provided four computers with Internet connections for the students to use. This was also reflected in the statements made by all the students in the informal interviews in 2012.

Anuradha: *"Infrastructural changes in the form of more computers with Internet connections have also helped me. It has helped me a lot in using the Internet" (SR12).*

Reshma: *"I do feel a lot of improvement has come with the Internet connection at the department"(SR12).*

Mubeena: *"More computers and [Internet] connections have made a big difference. Whenever we have time, we use the Internet now" (SR12).*

Bindu: *"Infrastructure has definitely helped. With more computer systems coming into the department …that has definitely improved my Internet usage" (SR12).*

The students' statements reflect the fact that they have had more opportunities at the institutional level in using the Internet with their

newly acquired competencies through the training and workshops.

In the context of this research, the element of the norms governing people's behavior indicated by the framework is the gendered role definitions of being women. It was found that this did limit their usage and access to public Internet cafés, as discussed in Chapter 5. The women students did have restricted mobility due to time restrictions. Even though the constitution grants equal rights to men and women, Indian society is basically conservative and gender stereotypes permeate the society. This contributes to and influences the Internet usage of the women students in this research. However, since the department began to address the problem of providing the students with sufficient access, the issue was to a certain extent solved. However, if they wanted to access a public Internet café, the cultural factors, such as visiting at odd hours and the cafés being male dominated places making the women hesitant to visit, still hold relevance. The opportunity structure and agency (empowerment outcomes) work together in order to understand the degree of empowerment.

7.5 Degree of Empowerment

Degrees of empowerment are measured by the existence of choice, the use of choice, and the achievement of choice (Alsop & Heinsohn, 2005).

Existence of choice: One of the significant issues in measuring empowerment is that having provided the opportunity to make life choices, do they have actual opportunity to make use of these choices (Alsop & Heinsohn, 2005). For the students in the research context, the opportunity to make a choice regards their prospects to use the Internet. In this research it is also significant that the students have the opportunity to use the Internet with the acquired skills and knowledge, improved confidence, reduced technophobia and improved motivation in using the Internet. The physical opportunities to use the Internet are in the form of an Internet connection at home, Internet facilities at the department and university and opportunities to access through public Internet facilities.

Only two students had an Internet connection at home. However, as explained earlier in the chapter, the opportunity to use Internet was available to the students. The issue was not that they had to travel far to get Internet access. The university did have an Internet center and there were three public Internet cafés within one hundred meters of the department. When the intervention research was initiated, the department had only two computers with Internet connection which the students were not allowed to use. However, when I visited the

department a year and a half later, the department had provided the students four computers with Internet connections, as discussed earlier. So there were opportunities available for the students to use the Internet.

The use of choice: The use of choice concerns whether a person takes advantage of the opportunity to choose (Alsop & Heinsohn, 2005). The students were not using the Internet center at the university because it was too far away from the department, and they were not allowed to use the two computers which had Internet connection at their department. Also, the students did not use the Internet because of lack of skills, technophobia and socio-cultural issues due to gendered role definitions; factors which are all related to the second order digital divide. Students did not use the public Internet cafés because they mainly had time to go in the evening after the classes, but the socio-cultural factors restricted their mobility in travelling unaccompanied and late in the evenings to use the public Internet cafés (refer Chapter 5).

However, when the students were asked again in the follow-up interview in 2012, they stated that they had started to use the Internet. The main reason I would argue is based on the findings that they have gained the skills and knowledge to use the Internet through the training and workshops through the intervention done one and half years before. This reduced their technophobia and made them more confident, and this also motivated them to use the Internet. Another factor which influenced their Internet usage was that the department had provided more computers with Internet connections for the students to use.

Achievement of choice: This aspect takes into consideration whether a person is able to achieve the choice. The students reflected that they do use the Internet, and the empowerment indicator questionnaire that they answered after one and half years also showed increased knowledge and skills, improved confidence levels, reduced technophobia and more motivation to use the Internet. Moreover, students' statements on their Internet use after one and a half years also reflected that they were successful in their Internet usage, which is the achievement of choice in this research context. Students' reflections through an informal interview in 2012 are as follows:

Anuradha: *"There is an increase in knowledge. I use the Internet mainly for my studies, you know like to take information for the assignments and also when I am presenting the seminars. I do not use any of the networking sites. I feel that the training and workshops have helped me a lot in the way I am using the Internet now. I also feel that*

I do not experience the fear which I had earlier when I thought of and wanted to use the Internet"(SR12).

Reshma: *"Earlier I didn't know anything… now I can do something. I can download materials and images. I mainly use the Internet for assignments and seminars. I can apply for a PSC exam alone now" (SR12).*

Mubeena: *"[The training] has definitely improved my knowledge in using the Internet. I knew little before, but with training and workshops I now know more. For me the Internet is very useful for taking information in preparing for seminars and also for writing assignments. I also use social networking sites like Facebook"(SR12).*

Bindu: *"I use [the Internet] more for my studies. Now we refer more to the Internet than to books. The Internet has been very useful for writing a dissertation and finding materials for seminars. I have applied for PSC exams online alone and I have applied online for other exams and also for getting job."(SR12).*

Jasna: *"I mainly use the Internet for my academic requirements. I use it for downloading materials for the seminars. It has also been helpful in finding information if I want something for the exams"(SR12).*

Tahira: *"Even though I have done a computer course before, I was not using the Internet, but after the workshops, there is a big change for me now. I feel that a stage has come where without computers and the Internet I cannot do anything. It is very useful for finding academic and studies related information, and preparing dissertations"(SR12).*

Soumya: *"Now I realize that nowadays everything happens through the Internet, and if I don't know the Internet, I will be left behind. I use the Internet for downloading materials and finding information on the Internet for my studies. I use the Internet also for finding information for writing my dissertation"(SR12).*

Hima *"Now I can take printouts alone, I mainly use Internet for taking materials and information for studies. I also use Internet for applying for jobs online and also applied online for the PSC exams"(SR12)*

Deepa: *"There has been an improvement in my knowledge and skills to use the Internet. I use it now mainly for my academic activities like for writing assignments, downloading materials for taking seminars"(SR12).*

The students stated that they were using the Internet even after the intervention. The majority of them mentioned they used it for their academic activities, for example for finding information and downloading materials for writing their assignments, conducting individual seminars and for writing their project dissertation. Some of them mentioned that they used it for applying for jobs online since they were in their final semester and will graduate soon. Thus, the students' statements show that the ability to make a choice in the form of gaining knowledge and skills to use the Internet was utilized by the students, and they were also successful in achieving their choices through using it for their academic activities and their future careers.

7.6 Summary

In this chapter, I have explained how the students' empowerment is measured through the ME analytical framework. The framework provided the scope to measure not only empowerment happening through agency, which is the indicators of empowerment, but also in analyzing how students can make use of the skills gained in the future after the intervention is over. By using the framework to measure empowerment, it can be concluded that the students were empowered through the provided opportunities to choose in life, which in this research context is to use the Internet through improved network knowledge, reduced technophobia, improved self-efficacy and motivation to use the Internet. Empowerment was also reflected through the student-produced drawings in the form of changes in ideas and attitudes, being emancipated and becoming a digital native.

The findings reflect that this empowerment can be facilitated through Internet training and providing opportunities for engagement and reflection in action research workshops so that participants can share and learn from one another in the group. The students were provided with a supportive and conducive environment so as to enable their learning. The opportunity or the choices to use the Internet after becoming empowered through these indicators does exist for the students. Students also made use of the opportunities and continued to use the Internet even after the interventions ended.

In the next chapter I will discuss how a design for learning to use the Internet for women users from a developing country perspective is proposed through this research.

CHAPTER 8

Design for Learning Internet for Women Users in a Developing Context – From ICT4D to an HCI4D Perspective

In this chapter, I propose a design for empowering women users in a developing context through learning to use the Internet from a human computer interaction for development (HCI4D) perspective, based on the theoretical discussions and empirical findings of this research.

8.1 HCI4D - Centered Design for learning to Use the Internet

Even though the Internet is an ICT tool that can bring wider developmental impact with its capability to make the citizens of the developing regions become empowered through knowledge, there has not been much focus in the literature on how a design can facilitate the usage of Internet for people who do not use even with sufficient penetration and access. A design for learning the Internet has great significance in a time when ICT4D is witnessing a shift from the mobile phone use to the Internet usage. According to the ITU report in 2011, "The ICT for development debate is witnessing an obvious shift: the focus is no longer on the mobile-cellular miracle, but on the need for high-speed broadband Internet access" (ITU, 2011, p. iii). What has to be looked into is whether having sufficient access to Internet makes the people in the developing regions use this available technology and solve the problem of digital divide; and, if not, how can people be made to use the available Internet facilities?

Internet usage is not evenly distributed across individuals. According to the latest report by ITU, the percentage of individuals who use the Internet in developing countries is only 24.4%, while 70.2% of the individuals in developed countries use the Internet (ITU, 2012). The gap identified in the Internet use is called the "digital divide." While the ITU report talks about the number of people who are online, the digital divide not only includes physical access to Internet but also a complex array of other factors, as mentioned in the theoretical chapter. These include knowledge and skills to use Internet, social and cultural structures that influence Internet usage behavior, autonomy of use, utility value, privileged background, psychological factors, etc. (Dimaggio, Hargittai, Celeste, & Shafer, 2004; Hargittai & Hinnant, 2008; van Deursen & van Dijk, 2010; Warschauer, 2002). It is seen that even though the digital divide in Internet access because of physical access is narrowing, the divide arising because of the social, cultural, and psychological factors that affect the Internet use in not much addressed(van Deursen& van Dijk, 2010a).

Scholars argue that the digital divide can be addressed by addressing the issues that are central to HCI,such as how to improve the fit between

technology and human needs and human context and how to design technology to facilitate human interaction with the technology(Dray, Siegel, & Kotzé, 2003). Keeping this in mind, in what way can a design for learning the Internet engage and make women participant's use more of the available Internet access facilities so as to empower them is the main underpinning of the design. A design from an HCI4D perspective is proposed through this research.

HCI4D focuses on "relationship between humans and technology in the context of international development, ranging from lower-level interface design issues to higher-level social interactions" (Anokwa et al., 2009, p. 101). It addresses questions of "how interactive products, applications, and systems can be appropriately designed to both address the distinctive needs of users in developing regions, and to cope with the difficult infrastructural contexts where these technologies must work" (Ho, Smyth, Kam, & Dearden, 2009, p. 1). Sociocultural aspects that influence the design and usage of technologies in developing countries is the core of HCI4D (Winters & Toyama, 2009).

Thus HCI4D has been mostly about designing ICT tools and technology that can be used by marginalized people to better their lives. I'll explicate how the design proposed through the research fits into HCI4D. HCI4D is a subfield of ICT4D that focuses on how people and technology interact in developing regions(Ho et al., 2009). Both ICT4D and HCI4D deal with issues related to the nature of interaction: "(a) between people and technology, and (b) between researchers and the community with which they are engaging"(Winters & Toyama, 2009, p. iv). Therefore, I would take the position that since the research comes under the umbrella of ICT4D and because HCI4D is a subfield of ICT4D, a design based on an HCI4D approach contributes to both the communities.

The design recommended through the research has a pragmatic approach (Marsden, 2008) because the fundamental idea that drives the design is to focus on a technology that is already in place and to leverage more from the technology. Through this research, I propose a design that basically talks about human interaction with technology,that is, Internet usage, by woman users in a developmental context, and how a design can facilitate improving usage to bring value to their lives and how they can be motivated to use even after an intervention is over through the project.

The main contribution of the design is that it is driven by the social learning aspect of using the Internet, which is not much addressed in the HCI4D literature. It is not a technology-driven design, as in the

case of most HCI4D designs, where the emphasis is on the product outcomes. The focus of the design is in learning to use the Internet and how a design that facilitates learning can improve the chances of successful Internet usage by woman users in a developmental context that can make them empowered. The focus on learning is mainly driven by the fact that "in the learning approach, outcomes come through the ongoing process of using ICT's rather than from the product of ICT's and process can be explicitly designed or shaped through understanding informal learning which links between actions and use and informal learning outcomes"(Foster, 2011, p. 2). In the wake of the Internet gaining prominence in ICT4D research, how can a design that facilitate learning to use Internet empower the marginalized people can bring new insights and perspectives to the field. Before discussing the design, I will first give an overview of why any kind of designing for usage of ICT is always a challenge in the developing country context.

8.2 Challenges for Designing in a Developmental Context

Designing for ICT4D is very critical for the successful adoption and future usage of ICT by the people for whom it is introduced. Heeks(2002) identify a design-actuality gap as one of the significant reasons for failure of ICT projects in developing countries.

As development is a social phenomenon and ICT is a technical phenomenon, ICT design framed for developmental goals should analyze the intervention strategies based on socio-technical terms(Dearden&Rizvi, 2009). Often the technology designs and methods developed are based on the first world's perceptions and usage of technology and the implicit assumption that the users are familiar with technology makes them difficult to employ in the developing world(Chetty&Grinter, 2007). The technological design elements of developed countries may not fit into the culture of developing countries (Dray et al., 2003). The main challenge for designers of technology for developing countries will be supporting alternative cultural identities in appropriate ways (Walsham, 2000). Thus, to conclude, designing for learning in an ICT4D setting is always constrained because of availability and access of technology, complexity and influence of socio-cultural factors, patriarchal gender roles, illiteracy, cultural beliefs, and people's values which influence their ICT usage.

Designing for ICT is even constrained when the target group is women users in a developmental context. If the potential of ICT has to benefit everyone, ICT designs have to be supportive of gender and cultural differences(Best & Maier, 2007). Gajjala (2002) argues that

technological environments should be designed to be women-friendly and gender-sensitive, which can empower and enable women in third-world countries. However, most of the time ICTs are designed and created within male-dominated environments and do not address the specific needs of women users(Dholakia et al., 2003).

8.3 Elements of a Learning Design for Internet Usage for Women Users in a Developing Context

Based on the theoretical as well as the empirical studies from this research, I would like to propose a design for learning and the elements that can contribute to an effective intervention, where the goal of the project is to empower the women users through learning to use the Internet in a developmental context.

Figure 8.1 below shows the elements of a design for learning, which I propose through this research for women users in a developing region. The figure shows the issues that need to be considered while designing for learning to use the Internet and what methods can provide insights to address these issues.

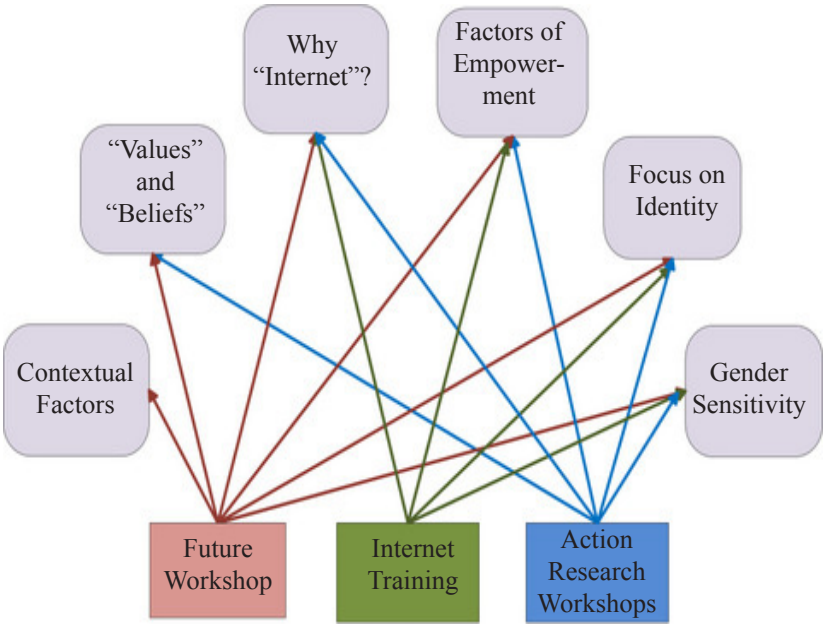

Figure 8.1. *Design elements for learning to use the Internet for women users in a developing context.*

8.3.1 Contextual Factors

I would argue that the first and the most significant thing in designing learning for using Internet in an ICT4D context is a thorough understanding of the contextual factors where the learning is going to happen. This contextual information provides the foundation for the project.

In this research, before the training and action research workshops were commenced, information about the contextual factors that were taken into account included students' demographic information such as age, family income, and place of stay (hosteler or a day-scholar). The data helped in knowing the financial status and the mobility that influenced the student's usage of the public Internet cafés. Information about experience with computers and the Internet were also taken,such as ownership of a computer/laptop, computer knowledge (having attended any course before), Internet usage experience, what factors restricted their Internet usage, how much time they spend on the Internet, what communication tools they use, what is the purpose of using the Internet, where do they access the Internet from. Background information was also taken on the cost of access at the university Internet center and also the cost of access from nearby public Internet centers. The questionnaire data facilitated gaining an understanding of the factors that cause a first-order divide,making access difficult for the students. Through conducting a Future workshop (refer to Chapter 4), an in-depth understanding of the barriers that they faced in using Internet was also gained. The "why" aspect of the problems faced were brought forward which facilitated to uncover the factors of second order divide which made access difficult for them.

In this research context, the gendered role structures that define the participant's role in the culture were also taken into account, since the participants were women users (Refer Chapter 5). Factors such as mobility and time restrictions for coming to the training and workshops that were the result of cultural norms in the society that defined their roles where thus taken into account. My identity as a women representative from the culture that they belonged to was helpful in understanding the socially structured gendered roles of women in the context that they belonged to.

Apart from specific background information of the students, the socio-cultural environment of the context where the research was done was also considered. A thorough understanding of how the culture facilitates the Internet usage of students was done. Background information about the country, state level and institutional level ICT

and Internet usage was also taken.

This significance of this element of background or contextual factors is also mentioned in the literature. "Sociocultural factors influence the perceived benefits of acquiring technology-related skills and availability of skills required to use a technology influences perceived ease of use and perceived usefulness of the technology and hence attitude towards its adoption" (Dholakia et al., 2003, p. 14). Scholars state about the significance on knowledge about the contextual design factors that those are relevant at the local level such as sociocultural factors, technological factors, economic factors and users' past ICT experiences for designing ICT in an developmental scenario (Parmar, 2009; Walton &Heeks, 2011; Winters & Toyama, 2009). The need for a gendered understanding of the ICT's and technological environment in designing ICT is also emphasized by the scholars (Gajjala, 2002).

This involves understanding the gendered role definitions of being women in the context. This is significant because it is seen that women's lack of engagement in the technology is mainly due to the gender inequality which arises because of these role definitions(Huyer & Sikosa, 2003; UN, 2002). And when designing for learning to use the Internet, the specific ICT tool that the research focuses on, a gendered understanding of Internet, is also important because "gender, as a structuring category of social life, affects accessing and using the Internet and as long as gender has any social meaning, the Internet will be gendered" (Kennedy et al., 2003, p.89).

8.3.2 Value and Beliefs About the Internet

Another element that will guide the design for learning the Internet to empower women users is how the users value Internet usage and what their beliefs are about the Internet. This is important because, in designing for ICT4D, it is also important to examine what ICT might mean for the users in the context (Dearden&Rizvi, 2009). "Values represent a manifestation of culture that signify espoused beliefs identifying what is important to a particular cultural group" (Leidner & Kayworth, 2006, p. 359). It is seen that culture is a significant element in determining the Internet learning skills (Dholakia et al., 2003), so a design for learning Internet should give significance to values and beliefs, which is a manifestation of culture. Future workshop can provide insights on what values and beliefs the participants hold about the Internet. Since it is a democratic and participatory method it can give new perspectives on how the participants believe that the Internet can bring value to their life and in which ways. How the perceptions about the values and beliefs about the Internet change through the

intervention can be understood through the action research workshops.

Values and beliefs about a technology are the outcome of the socio-cultural structures that people belong to. So cultural perceptions toward the Internet will influence how people accept and use the Internet. As discussed earlier, culture is a fabric of society and the gender identities are essential facets of the culture,because they determine the way the daily life is lived not only with in the family but also in the society as a whole(UNDP, 2001). To be accepted, understood, and respected in a society requires that people act in accordance with the sociocultural norms and how gender is expressed and how one relates to technology are part of these sociocultural norms(Wamala, 2012, p. 8). In this research, it was found that even though culture played a significant role in non-usage of the Internet, the students did value Internet use and they had positive beliefs and attitudes about using the Internet. I had asked for voluntary participation and all the students in the class except one student who had a computer and laptop were interested in learning to use the Internet. Even though they were not using the Internet they did believe that through using it they would get the opportunity to access an abundance of information that can add value to their academic life as well as other endeavors. Thus, they perceived that Internet usage could bring a positive change to their lives. However, since they were not using it in their daily lives I did make an effort to explain in what possible ways it could benefit their life through presentations and informal talks.

This approach in considering the values of people involved in using the Internet in an ICT4D scenario can be really effective in helping them learn to use the Internet, since people's perceptions of the Internet differ from culture to culture and they value Internet usage differently. As mentioned earlier, the women students in the research did believe Internet usage could be beneficial to their lives and so I did not have to make an explicit effort to make them understand the significance of Internet as a tool. This could be because of the fact that they are master's degree students in a university that positively influences their beliefs about the Internet. However, this may not be the case in another context with a different group of participants. For example, in a study done by Johnson(2010) on Internet usage by women users in southern India, it was found that the mothers who were housewives gave up the Internet because they did not understand how they can widen their interest and learn anything from the Internet that can be beneficial for them. In another study done by Best & Maier (2007) on Internet usage by women users in a city of south India, the single woman non-user who maintained that the Internet kiosk was not of use also stated that she did not understand the purpose of the Internet itself.

Thus a thorough understanding of the cultural values and beliefs that people hold with respect to the Internet while designing the learning can help in improving the acceptance and usage of Internet in the future, even after the project is complete, thus addressing the issue of sustainability. Studies also show that cultural perceptions toward technology influence the acceptance and future usage behavior of the users. (Chen et al., 1999 ; Leidner & Kayworth, 2006; Loch et al., 2003; Straub et al., 2001). When it comes to women users Internet usage, culturally constructed gender roles and relationships influence the extent to which women use the Internet (Kennedy et al., 2003; Vijayalakshmi & Bhavani, 2006). However, it is seen that there is a lack of attention on cultural beliefs and their impact on ICT adoption in developing countries (Albirini, 2006; Loch et al., 2003). Poor understanding of ideas, beliefs, and values of how technology should be utilized in developing countries challenges the designers of technically advanced societies for successful implementation and usage of technologies (Straub et al., 2001), so the values and beliefs that are shaped by the cultural perceptions towards the Internet have to be given significance while designing for learning.

To have an in-depth understanding of what values women users give to the Internet in a particular context, I would argue that the concept of information ecologies developed by Nardi&O'Day(1999) can provide insights for designers of ICT in a developing context, about how the people value the Internet and what perceptions they hold about Internet usage so that learning can bring effective results. This element of what values and beliefs that the participants hold about the Internet has to be taken into consideration before the project starts and they begin to learn using the Internet. This is the motivation why the theoretical concepts of Nardi & O'Day (1999) are used apart from Wenger's theory in this design because, if the participants have negative attitudes and do not assign much value to Internet usage, then participants have to be given more awareness of the potential benefits of the Internet as a tool and how it can bring positive changes in their life's before the training starts and they start to learn how to use the Internet. This is because, if the participants do not believe in the technology of Internet as such and do not believe that using Internet can bring any value to their lives, making them learn how to use the Internet and facilitating training and scope for Interactions and mutual engagement and providing scope for constructing identities as an Internet user may not be effective unless their negative beliefs about using the Internet are changed. Therefore, a design for learning should have the possibility of addressing how a women user values the Internet and must accordingly provide Internet awareness, what the potential benefits are that the Internet can bring to her life, and also the motivation to use the Internet.

Information ecology is a "system of people, practices, values and technologies in a particular local environment" (Nardi&O'Day, 1999, p. 49). "An information ecology deals with the local differences while still capturing the interrelationships among the social, economic and political context in which the technology is invented and used" (Nardi&O'Day, 1999, p. 47). According to the authors, there is an element of uncertainty that the adoption of new technologies brings to the quality of life and work. They believe that "people often distance themselves from a critical evaluation of technologies in their lives, as if these technologies were inevitable forces of nature rather than things we design and choose" (Nardi&O'Day, 1999, p. 14).

For Nardi&O'Day (1999), "every information ecology must uphold the values and ethics of the people involved in using the technology in addition to considering the efficiency and productivity of the technology" (p. 67). In their opinion, "if the practices that evolve in a socio-technical system are efficient and productive but fail to uphold the ideals and ethics of the people involved, the system will be subject to considerable stress" (Nardi&O'Day, 1999, p. 68). Nardi&O'Day emphasize that the values that people hold should be explicitly mentioned, which can enhance the usage of technology at different habitations.

These research findings also underline this aspect in considering how the culture reflects the Internet usage and how the design for learning is influenced by how the women users value the Internet and what beliefs they have about the Internet usage. The information ecology perspective of Nardi&O'Day (1999) will provide a new theoretical contribution to the field of ICT4D, which can help the designers to bring theoretical perspectives for the projects aimed at empowering women in a developing context, about what value and beliefs the women in the study has about Internet or any other ICT tool.

8.3.3 Why the Specific Technology (Internet)?

Another important element that should be considered in the design is how the Internet is going to add usefulness to the life of the women participants. In this research, since the participants were students, the intervention was designed based on what possible ways they are going to use the Internet and how the Internet can bring significance to their lives. For example applications like Google Scholar and Google Books were consciously selected as learning activities, keeping in mind that they were university students. It was seen that they were given topics related to women's studies as tasks and activities in the Internet training and action research workshops, since they were master's students in

women's studies and performing the related topics that they were studying can make them relate to the Internet. It was kept in mind that they will realize they can get information easily and quickly about academic activities, which can make them motivated to use Internet.

Nardi&O'Day (1999) also state that the "technology that is in question should be evaluated to know what significance it holds and what it means for the users in settings"(p.69). Usually there is a tendency to consider only the "how" questions that deal with the practicality of technology. "While the 'know-how' questions do inform the design but it is equally important to ask the 'know-why' questions so that technology can be used productively" (Nardi&O'Day, 1999, p. 71).

With regard to learning to use Internet, the design should consider the groups of women who are going to use the Internet and in what ways the Internet can add value to their lives. What should be given emphasis is, as seen in this research context, that the design for learning should be guided by the intended users. There is also a need identified in the ICT4D literature demanding research in developing regions on what users want from the Internet and identifying a connection between needs and the skills required to meet those needs (Walton et al., 2012). So, when designing for learning Internet for women users, the needs and what potential benefits the Internet can bring for them should also be considered and the theoretical underpinning from Nardi&O'Day (1999) can help the designers to address this "why" element in the design. This "why" dimension can also provide leads to framing the empowerment indicators as in what aspects of learning Internet can bring empowerment for the women users in the study.

This "why" question can give visions as to what the motivation is for using the particular technology/tool, why the particular technology is best for the task in hand,why it fits well to the practices of the research participants, and also possibly why it won't be fit for the practices. According to Nardi&O'Day (1999), there are no standard answers and the answers must arise from the particular local circumstances of the each ecology. For example, how women students will benefit from Internet use might be similar for the women students in this research context as well as the college-going female students in the study done by Krishnatray et al., (2010) but the Internet will have a different usage value for the rural Moroccan illiterate women weavers selling textiles on the Internet in the study done by (Davis, 2008).

Thus, how the Internet is going to make a difference for the different women users should be envisioned through the design. Training and

workshops have to be designed based on the needs of the women users and bearing in mind what potential benefits the Internet can bring to the targeted women users. Future workshop can give an understanding of the Internet knowledge and usage level of the participants and can give insights on "why" the Internet is going to be useful for the participants. Training and action research workshops also address the "why" dimension of the design where Internet activities and tools selected for learning and discussions are designed based on the needs of the women users and bearing in mind what potential benefits the Internet can bring to the targeted women users.

8.3.4 Factors of Empowerment

Another major design component is the need to take into consideration the factors of empowerment. Based on the findings from the research, I would recommend that a learning design should take into consideration some fundamental factors of empowerment by the designers who have the aim to empower the women participants through using the Internet.

- Define empowerment: Because of the complexity of the word"empowerment" and the various fields and areas that the term has been applied to, makes it essential for defining what it means in the research context. The designers should describe what empowerment through learning to use the Internet for the participant's means. This way the research can address the contextual factors that determine empowerment for the participants under the study because what is empowering in one context may not be in another.
- Level of empowerment: The concept of level of empowerment helped me as a researcher to consider which level I had to contemplate to understand empowerment happening for the student participants: Was it at the individual level or was it at the group level? This aspect of empowerment can help developmental scholars focus on empowerment through learning to use the Internet at the individual level; or is it the collective empowerment as a group that needs to be given emphasis? This differentiation of the levels is important because how participants experience empowerment will be different for these levels. For example, if the participants are a group of women doing unskilled labor work and if learning the Internet can facilitate selling online what they produce, then the focus could be on the individual empowerment; or it could also be the collective empowerment of the group of women where the empowering experience will be based on the collective effort of the group.

- Empowerment as a process or /and outcome: Developmental scholars should also consider how they conceptualize empowerment in the research. In this research context, empowerment was viewed as a process which could be experienced as well as an outcome that could be measured. This process of outcome differentiation can give the scholars directions on how to document the empowerment happening in the research context in terms of experience gained or specific outcomes that can be measurable.
- Indicators of empowerment: Developing context-specific indicators can help the scholars to see if the desired change could be achieved through the intervention. The designers can frame single or multiple indicators. Sometimes the essence of what empowerment means through learning to use the Internet cannot be captured by a single measure. In the context of this research, indicators of empowerment framed were improved networked competence, reduced technophobia, improved Internet self-efficacy, and improved motivation to use the Internet. These multiple indicators were developed using different theoretical perspective so as to capture the essence of empowerment through learning to use the Internet for the student participants. I would recommend that framing of indicators should be based on multiple theoretical perspectives if necessary to cover the various aspects of being empowered by using the Internet. These indicators were developed with discussions from the student participants. Thus designers should consider what the indicators of empowerment could be through learning to use the Internet for the women participants. The pointers developed can be more effective if they are developed with discussions from the participants under the study,because this also gives a sense of ownership for the participants and they start to relate more to the project.

Future workshops can be used as a method by ICT4D scholars to define what empowerment will mean for the participants in the specific context and also for developing context specific indicators of empowerment through Internet. Internet training and action research workshops can provide opportunities for the participants to engage with using various Internet tools and applications. Internet training and workshops can also be used to facilitate motivation and a supportive and conducive environment for the women participants so as to bring empowerment through learning to use the Internet.

8.3.5 Focus on constructing identity as an Internet user

The research reveals that learning to use the Internet facilitated negotiating identities for the students. As discussed earlier, it was found in this research that students were not using the available Internet facilities because of lack of knowledge and skills, technophobia, low Internet efficacy or confidence in using the Internet, and gendered role definitions being women in the cultural context that restricted their Internet use, which is characterized as a second-order divide. The research facilitated to construct identities as Internet users in relation to the Internet world through which they developed a sense of belonging in being a user of the Internet rather than merely having the ability to use the Internet in the abstract, which in turn made them realize that it is the difference in being an Internet user that can bring change to their lives (refer to Chapter 6). The theoretical underpinning of CoP helped in viewing learning as constructing identities for the women participants in the research, which was conceptualized as the process of empowerment.

I would take the position that the theory of CoP by Wenger could bring new insights for designing of learning to use the Internet for women users to make them empowered in a developmental context. CoP focuses on the culturally specific forms of participation and reification that exist in a particular community (Jørgensen& Keller, 2007).In this research,negotiation of meaning for the students occurs in how they interpret the experiences of Internet usage and how they understand and see themselves as Internet users in their social context. Thus, learning is viewed as a process with different forms of involvement and modes of engagement characteristic to a local context of activities (Gherardi, Nicolini, &Odella, 1998)and it can be designed to bring more effective results through learning to use the available Internet access facilities. Thus, CoP can add value for ICT4D projects focused on helping women users learn to use Internet, as each ICT4D project is unique, with its own composition of features that are embedded in the sociocultural setting, so perceptions and attitudes towards learning to use the Internet will be distinct for the participants in different projects.

As discussed in the theoretical chapter, learning how to use the Internet effectively can be challenging for novice users (Uden et al., 2001). This is because an Internet search can give inconceivable volumes of information that is unstructured, making it look chaotic (Lazonder, 2000; Edwards & Bruce 2002). Learning how to use the Internet is not an easy task because of the diverse paths of navigation and usage options (Iske et al., 2008). What makes it more challenging

for novice users is that the problems that are applicable to an information system, such as disorientation, navigation, inefficiency, and cognitive overload are multiplied on the Internet (Uden etal., 2001). In addition, learning to use the Internet can bring more challenges for novice users who are women with limited access to the Internet in the context of a developing country.

Instead of this skills-based approach, I suggest focusing more on the construction of the identity as an Internet user. Based on the framework of Wenger(1998), my research has shown that providing women with the possibility of identifying themselves with Internet use changed their understanding of themselves as Internet users. And this change brought more effective results in the teaching and learning process because the focus was on the process and the women's experiences as Internet users and not only on the skills of how to use the Internet.

In Wenger's (1998) view, "learning cannot be designed, it can only be designed for—what is facilitated or frustrated"(p. 229). Wenger proposed a learning architecture based on his analysis of learning at the level of practice and identity. Wenger's learning architecture is composed of dimensions of a design "space" which is basically about the general questions, choices, and trade-offs to address in the design and the basic components and facilities to be provided that will address what needs to be achieved with the design.

Since the design interventions in ICT4D is always situated (Dearden&Rizvi, 2009) and in CoP learning is viewed as negotiating new identities that are both situated and dynamic, a CoP-based learning framework can bring new ways of understanding learning how to use Internet in a developmental context that is situated and is context-specific. Wenger's learning architecture emphasizes the need for a design for learning to offer participants varied forms of participation and modes of belonging in a community of practice and support for learning as a process of identity change (Brosnan & Burgess, 2003). The learning framework provides a guideline as to how the traditional facilities like physical infrastructure, information technologies, and organizational structures and roles can address the four dimensions of design and provide facilities that support engagement, imagination and alignment.

Figure 8.2 represents Wenger's framework for design dimensions and infrastructures for learning, which is contextualized for an ICT4D learning context to learn the Internet.

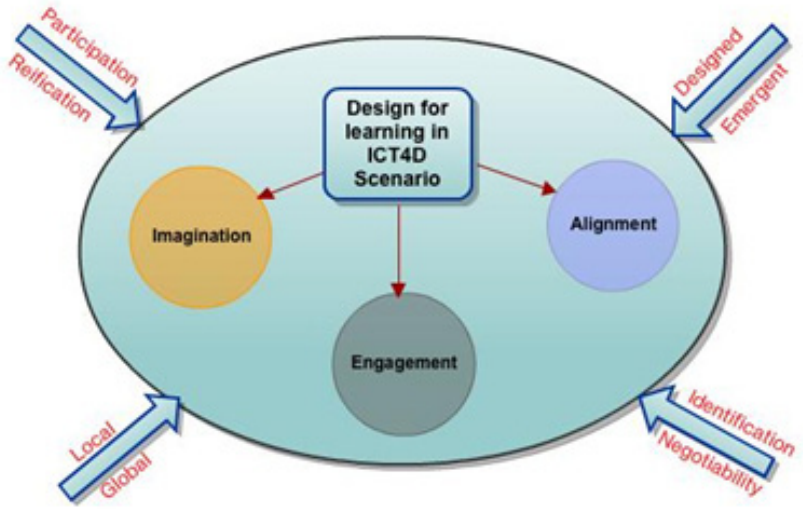

Figure 8.2. *Wenger's learning framework adapted to an ICT4D context.*

Wenger's learning framework comprises four dualities, which address the fundamental issues of meaning, time, space and power with regard to practice and identity. These dimensions define a "space" of possible approaches to design problems, in which a given design is located by the way it addresses each dimension (Wenger, 1998, p.236). The intention of addressing these dualities is not to choose between the two extremes of the dualities rather to consider the tension that are inherent in the interactions while designing for learning.

8.3.5.1 Reification/participation

This design dimension stresses the significance of distributing the design between participation and reification in terms of what to reify, when and with respect to what forms of participation(Wenger, 1998, p. 232). The design dimension makes sure that artifacts in the form of tools, procedures and schedules are in the place and also emphasizes the importance of right people at the right place to make things happen efficiently. These choices through the design make the resources for negotiation of meaning.

In this research, students were given free Internet training and were taught various tools and applications. Students were given the opportunity of participation through the action research workshops where they shared their learning experiences, reflected on what went

wrong with the Internet searches, and how they could improve Internet searching, and also sharing successful search strategies of Internet by working as a group. Students were also given the scope to reflect on the whole Internet experience in terms of power failure and infrastructural issues,such as a faulty keyboard or mouse that affected their Internet usage. How the design dimension of participation and reification was balanced has been discussed in Chapter 8. Reification also facilitated imagination and scope for envisioning what would be the most desirable scenario of Internet usage, which the students wanted. This research focused on improving the conceptual and reflective skills to use the Internet by making the students confident in their Internet usage skills through the participative and reificative sources.

Thus, in an ICT4D learning context where the goal is to learn the Internet, the design dimension is about bringing the participants together and providing them with various participation and reification sources. This could be in the form of uninterrupted Internet connection, giving opportunities to use various Internet tools, and providing them with enough resources that can help them to use the tools in the form of facilitators or trainers. Thus, the duality emphasizes a productive balance between resources for learning and the activities that will make use of these resources(Brosnan & Burgess, 2003). The need to facilitate participation by the intended beneficiaries and users by providing learning opportunities is stressed by developmental scholars for the success of the ICT4D projects (Walton &Heeks, 2011) and this design dimension of Wenger's learning framework can very well address this issue.

8.3.5.2 Designed/emergent

Wenger states, "there is an inherent uncertainty between design and its realization in practice, since practice is not the result of the design but rather a response to it" (Wenger, 1998, p. 233). This emergent nature of practice and identity calls for the design to have the scope for improvisation and innovation and the challenge of the design is not to ignore the emergent but incorporating it, as unexpected adaptations are inherent in the process. For example, in this research context, there were some learning activities which emerged from the student's demands. Students wanted to search information from the Internet and then use it in a PowerPoint presentation because this activity was very significant for their individual seminar activities through which they negotiated meaning as Internet users. The duration of this activity was planned in advance but on the students' request had to be extended. This shows that the research provided space for participants to negotiate how they translate the design in ways that are meaningful

to them (Brosnan & Burgess, 2003). Thus this dimension of the design focuses on the tension between pre-organized activities and emergent activities (Baek & Barab, 2005).

I would state that this design dimension is very significant in the context of a developing country, where the learning is organized for women users to learn the Internet. This is because, since the women users are new to Internet technology and when the usage is restricted due to the second-order divide, there are chances that new learning needs and demands might emerge from the participants in the group. And also, as reflected in Chapter 4, technical, infrastructural, and cultural challenges are very much part a project conducted in a developing context. Power failures and the mobility of the women users can influence the design of the project and this calls in for a design that provides scope for emerging issues that will influence the learning activities. Thus designers cannot design all aspects of the learning and there are chances that the learning they intended may not be the one which emerges and keeping this in mind a effective design should be flexible to incorporate the emerging learning requirements(Baek & Barab, 2005; Brosnan & Burgess, 2003).

8.3.5.3 Local/global

Wenger (1998) states that "design will create relations not between the global and the local, but among localities in their constitution of global" (p. 234). This duality focuses on how communities relates with the rest of the world, through creating continuities across boundaries(Coto, 2010).

In this research context, the students contacting a foreign author through email and able to follow writers and personalities through Twitter and searching and applying for jobs online all provided the scope for connecting or getting linked to a broader enterprises in the global Internet world. In this way, they were creating new connection to the broader constellations where learning is relevant, as stated by Wenger (1998). However, what was missing in this research context was the design dimension of providing scope to interact with other communities of practice. Thus the design for learning the Internet for novice users from an ICT4D perspective should focus on how the participants can learn through engagement at the local level through various Internet activities and tools and how can they relate to a broader framework where the activities are located which is the Internet or the web world.

I would recommend that through this dimension designers should

provide scope for the women participants in the group opportunities to interact and learn from other groups where participants are first time users of Internet and what challenges and opportunities do they see in using Internet and thus providing the scope for connection across communities thus providing boundary encounters through visits, conversations and meetings. Boundary encounters could also be through opportunities provided for calling in experts from other developmental organization or individuals who can bring in their experience of how Internet influences their life thus providing motivation for the women participants.

8.3.5.4 Identification and negotiability

The dimension of identification and negotiability is about "how the power to define, adapt, or interpret the design is distributed" (Wenger, 1998, p. 233). While the other three dualities were about balancing both the aspects of duality, this design dimension stress the significance of one being a necessary condition of other (Baek & Barab, 2005; Coto, 2010). Wenger (1998) state that "design creates fields of identification and negotiability that orient the practices and identities of those involved in various forms of participation and non-participation" (p. 235).

In this research context, students while joining the group had the likelihood to identity with the Internet and then participate as members of the Internet world. Apart from three students, all others were new to the Internet, so there was some level of disorientation that inhibited their identification with the Internet world during the initial phase of training. However, as they progressed in their learning, the identification of being a user with relation to the web world changed in a positive way. Even though students did not become experts in Internet usage, they did feel that they felt a sense of belonging and they did identify with the Internet world. However, this may not be the case in all learning scenarios. There could be a possibility that participants in the group may not identify with being members of the Internet world and may fail to negotiate any meaning with respect to Internet usage. Through this design dimension I would argue that the designers of ICT4D to consider how the beneficiaries could participate in the community to negotiate meaning and identify with the community.

Wenger defines three modes of belonging as the main infrastructural components of the learning framework: engagement, imagination, and alignment. A design for a learning environment to use the Internet should provide facilities for these modes of belonging that will help to the women participants to make sense of learning and identity

formation. How the participants were facilitated with these three modes of belonging in this research has been discussed in detail in Chapter 5. Based on the empirical findings I would recommend which facilities of engagement, imagination and alignment designers should consider.

8.3.5.5 Facilities of engagement for learning to use the Internet

Engagement from a belonging perspective is considered to be the ability to take part in meaningful activities and interactions, in the production of shareable artifacts, in community -building conversations, and in the negotiation of new situations (Wenger, 1998, p. 184). In terms of use of technology, engagement, and participation at the local level is very much needed for its effective use (Nardi & O'Day, 1999).

Engagement is about direct involvement and in the research context it was about learning how to use the Internet and gaining experience. Students in the research were provided opportunities to learn and use the Internet and were given scope to share what they learned and what problems they faced in using the Internet. How engagement was facilitated in the research is discussed in detail in Chapter 6. Engagement is different from the other two modes of belonging, as it demands direct involvement (Jørgensen& Keller, 2007). In an ICT4D learning context where the users are women who are coming together to learn to use the Internet, their direct experience with the Internet comes through engaging in various Internet activities through various tools and applications that can contribute significantly to shaping their identities. Through engagement, the women users come to know who they are in relation to an Internet world through direct involvement.

Through the findings from the research, I would like to propose some guidelines that can facilitate engagement in a learning design. Wenger says,"in order to support learning, engagement requires authentic access to participative aspects (access to and interaction with other participants) and reificative aspects of the practice (access to symbols, tools, language, documents, etc.) in concert." This dual access to participation and reification makes engagement a special context for learning and identity. Engagement can be facilitated through Internet training and action research workshops. The facilities of engagement that can foster learning to use the Internet for women participants in an ICT4D scenario could be as follows:

- The starting point for supporting engagement is what Wenger calls "interactional facilities," which should be offered through proper

spaces. In an Internet learning context, providing uninterrupted an Internet connection is a core requirement. This is a challenging aspect in most of the ICT4D scenarios, where the Internet connections are often disrupted, connection speeds are low, and power failures are frequent.

- There should be informal sessions where students can talk without inhibitions about their perceptions of the Internet. Students should be given opportunities to reflect on how they perceive the Internet. This type of activity can bring diverse ways of understanding how to make the students use the Internet, which is very much situated and context-specific. Often women from developing countries especially from small towns and rural areas can be less verbal, shy, and reserved in expressing their thoughts. Informal session can provide an encouraging and supportive environment for the women users to break their inhibitions.
- Facilitators for learning who can help and encourage the participants in learning to use the Internet are necessary. Moreover, participants who are fast learners and who have some kind of knowledge about using the Internet can also be encouraged to help others in the group. Nardi&O'Day (1999) also emphasize the need for "keystone species" whose presence is necessary for the effective use of technology in ecology and sometimes for the very survival also(p. 53).
- For the design element of competence in supporting engagement, opportunities for activities relating to various tools of the Internet must be provided. These activities can provide the scope for applying the Internet skills the students have learned through the intervention of Internet training and workshops. Activities selected for learning should be based on which category the women participants belong to, that is, whether they are students, housewives, illiterate women from rural area, etc.
- Action research workshops can provide the scope for reflective sessions and can make engagement more collaborative. Participants should be given opportunities to share and reflect upon the difficulties faced in finding information on the Internet and also discussing with other members in the group how these can be solved. Attention should be given to the process involved in searching, which will help to develop their reflective skills rather than focusing on correct information in the abstract.
- Facilitators or trainers can make reports of the participants' learning activities, what they learned, and discussions of the learning process in using the Internet, for documenting the learning process.

8.3.5.6 Facilities of imagination for learning to use the Internet

Imagination, in Wenger's (1998) words, is "creating images of the world and seeing connections through time and space by extrapolating from our own experience" (p. 173). Imagination could be an important component of the women's experience of the digital world and how they see themselves in it. When the women users start to make connections between their past Internet usage, their current Internet learning, and their future opportunities in life, the process of reflection of the past, present and future can potentially create new identities. It can bring new learning situations of how to use the Internet for them, which in turn can expand their choices in life. How imagination was facilitated in the research is discussed in detail in Chapter 6.

Imagination requires the ability to disengage and move back and look at the engagement from the eyes of an outsider. Future workshop is an apt method for facilitating imagination among the women participants. This type of thinking can create novel situations to learning. Facilities of imagination for an ICT4D learning scenario could be:

- Encourage thinking in alternative ways for learning to use the Internet. These discussions can bring new insights and is in line with the point Nardi&O'Day (1999) have emphasized: "just talk has the power to change things. (p. 75)"
- Inspire traveling across the borders of how the participants see themselves using the Internet in the future. This can be realized through, for example, participant-produced drawings, as the cognitive process that participants use when they are asked to draw is different from when they are asked to verbalize or write about their experience (Kearney & Hyle, 2004). This is an apt method for imagination because it includes "fantasies and withdrawal from realities" (Wenger, 1998, p. 177), and drawings enable getting an insight into a respondent's most salient idea or perception without limitation (Nossiter&Biberman, 1990). (How participant-produced drawings have been used to facilitate imagination in this research is discussed in Chapter 6)
- Provide scenarios where the students are encouraged to think of which tasks in everyday life could be done using with the Internet and also making them reflect on how they do those tasks now. These ways of thinking about doing things in the absence of the Internet can make them appreciate the potential value of the Internet in their daily lives.

8.3.5.7 Facilities of alignment for learning to use the Internet

Alignment is about "coordinating our energy and activities in order to fit within broader structures and contribute to broader enterprises"(Wenger, 1998, p. 174). "The work of alignment is to connect the local efforts to broader styles and discourses that allow learners to invest energy in them" (Wenger, 1998, p. 186). Alignment assists in strengthening our power and aids in realizing the possible. The research did not provide scope for interacting with other learning communities.

Below are some of the facilities of alignment that should be considered from the perspective of learning to use the Internet in an ICT4D:

- Ensure that the women users are aware of the role the Internet plays in the global context and its developmental potential, which can empower them.
- Encourage women to reflect on their experiences of how being a member of multiple communities affects their Internet usage. These reflections can help them to think about and coordinate their energies of how obstacles can be overcome and also makes them aware of what it takes to become an Internet user in the digital world.
- Reinforce the need for the Internet and the advantages it can bring after they leave the project and what value it can bring to their lives. What they are learning is a lifelong skill that has wider implications for their life, and which was not just confined to the immediate group that they belonged to at the time when the intervention is happening.
- Encourage the users to think about the policies and regulations related to using the Internet in a broader scenario. This could, for example, be done by making them aware of Internet etiquette. Preece(2004) states that "[n]orms, including rules of etiquette, are learned through experience in a community."
- Examine opportunities for interacting with other groups who have similar learning goals with using the Internet.

Thus, a learning framework that facilitates the three modes of belonging, engagement, imagination, and alignment, can help the women participants to negotiate identities as Internet users in a learning group. This experience of constructing identities by the women participants can be conceptualized as the process of empowerment for the research participants. This learning framework provides the scope to facilitate effective use of the Internet by the women even

after the project is completed, as the learning environment provides opportunities for them to develop identities that can motivate them to use the Internet in the future, even though they may not become experts in using the Internet through the course of the project.

Wenger (1998) states that learning is an integral part of living and being in the world, and the problem is not that we do not know this, but rather that we do not have systematic ways of talking about this familiar experience. An adequate vocabulary is important because the concepts we use to make sense of the world direct both our perception and our actions. As mentioned earlier in this chapter, even though informal learning is a crucial component for the success of ICT4D-based projects, it is rarely acknowledged in the literature (Foster, 2011). The theory of CoP can help give development scholars and project managers an essential vocabulary to address the process and learning issues in informal learning environments, thus opening up new ways for understanding how to make women users of the Internet, as well as other ICT-based tools in a development context. If informal learning is the primary focus of intervention, it can potentially provide more appropriate ways to understand empowerment, social change and participatory production within ICT4D (Foster, 2011). The research also shows that focusing on the informal learning through the theoretical constructs of CoP provides an understanding of how empowerment can be viewed as a process for the women participants under the study

8.3.6 Gender-Sensitive Training

One of the key factors for designing for learning the Internet in the context of a developing country is the need to be thoughtful about the structured patriarchal roles which defines the role of a woman in the cultural context of the research. This is because the gendered role definitions of the culture influences the usage of technology by women(Johnson, 2010).

Based on the findings from this research, a significant element of the design is the need to bring gender sensitivity to the training programs. In this research, the students were asked what difference it would make if it was a male trainer who did the same kind of research with training and workshops and their reflections touched upon intricate and highly relevant issues,revealing that it does make a difference if the researcher or trainer is male. The factors that they came up with have been discussed in detail in Chapter 5. Developmental organizations and scholars have recognized the need for gender sensitivity in the training program intended for women's ICT usage (Melhem et al.,

2009). The need for ICT training programs to consider women-only training sessions with women trainers has been given emphasis in the developmental context(Jorge, 2000; UN, 2005). Local facilitators as women can make the female participants more comfortable in ICT4D projects(Anokwa et al., 2009). Primo (2003) argues that, when learning to use computers, women may be uneasy if a man is in charge of training, even in countries where women and men mix freely.

Based on the reflections by the students in the research, I would recommend that while designing a training program intended for women users, the gender of the trainer should be considered. This research also supports what is stated in the literature that having women run training programs exclusively for women participants can make Internet learning more effective. I would also state that gender sensitivity in a design should not be confined to providing a women trainer, the design should also take into consideration the culturally specific role definition of what it means to be a woman in the specific context, which can influence a women's mobility and time restrictions to come to a training program even if it is done by a woman trainer. Moreover gender sensitivity has to be taken into account in recommended intervention oriented research methods of Future workshop, Internet training and also action research workshops.

8.4 Summary

Based on the findings of the research, I have proposed a user-centered design driven by the learning aspect that can facilitate better acceptance and usage of Internet by women users in a developmental context by bringing empowerment for the women. The aim of this design is to address the issues of the second-order divide in Internet usage by empowering women through learning to use the Internet. To sum up, a design for learning to use the Internet intended for women participants in a developing context should consider:

- Collecting background information of the participants in the study. This involves demographic factors and Internet usage and knowledge levels of the participants.
- Having a thorough understanding of the "values" and "beliefs" that the participants hold about the Internet
- To consider "why" the Internet is important for the intended group, taking into account which category of women the participants belong to.
- The learning design should consider some fundamental factors about empowerment that can guide the research. They are: What

does empowerment through learning to use the Internet means for the women participants, the level of the empowerment happening for the participants should be focused on (individual or collective empowerment), if empowerment is viewed as a process and/or an outcome, and framing of context-specific indicator or indicators of empowerment so as to capture the essence of what empowerment through learning to use the Internet means for the research participants.

- An integrated approach of using Future workshop, action research workshops and Internet training designed taking into consideration the women participant's knowledge levels and why the Internet is going to be useful.
- Provide opportunities for participants for constructing identities as an Internet user.
- Use of a multimodality approach where participants make meanings of how they are empowered through verbal statements and visualizations.
- Bring gender sensitivity to the training and also ensure that the trainers or facilitators are women.

Though the context of the research study was a university with master's degree level students as participants, the design proposed could be adapted to learning contexts where the participants are first-time users or people with limited knowledge about the Internet.

CHAPTER 9

Conclusions, Reflections and Further Research

The aim of this chapter is to summarize the research, to conclude the research findings, and to provide insights on the scope for future research.

9.1 Summarizing and discussing the Research Questions

Firstly I will summarize and discuss the findings based on the three research questions. The main focus of the research was to find out how women from a developing country context could be empowered through learning to use the Internet. To address the issue the research had to find out what barriers kept women users from accessing the Internet and how women can be empowered through learning to use the Internet, using an intervention oriented research that takes into consideration the participants' knowledge levels, frequency of access, attitudes, and how they valued the Internet. The research also answers what factors needs to be considered for a design for learning to use the Internet for women users in a developing context

What are the barriers which constrain women to access Internet in a developing country context?: The first research question was to find out what the barriers were for Internet usage for the women students in this research context. The findings on the first research question contribute to the ICT4D area in terms of what barriers are faced by women users in an Indian context, signifying the state of affairs in 2010 addressing the time dimension of ICT4D. The conclusion from these findings is that in an Indian context, access figures in terms of connectivity are not the only issue that should be taken into account to bridge the digital divide. The findings from the research also reflect the fact that India still needs to go a long way in terms of providing infrastructural facilities so as to provide equal Internet access for all its citizens. The findings also show that accessing and using the Internet is not a problem that is confined to women from a rural population. Another element that the findings throw light upon is the relationship between literacy and ICT access. Literature on ICT usually claims that one of the major barriers for women not using ICT is illiteracy. But the findings from this research show that being educated does not mean that the women in a developing context like India are making use and taking advantage of the available Internet access. The findings also show that ICT capacity of the institutions which the students are affiliated to also influence their Internet usage.

Findings show that the barriers the students faced in using the Internet were due to first order and second order effects. Factors in

the form of first order effects came as infrastructural, technical and financial barriers. Coming to the second order effects, one of the factors that made access difficult for the students in this context were lack of knowledge and skills to use the available access. This shows that digital skills are unevenly distributed in the society and unless women have the requisite skills to effectively use the available Internet access or any other ICT tool, then sufficient infrastructure meant to bring development will not bring the desired developmental results. Second order divide were also identified in the form of psychological factors which influence the use of the Internet like technophobia and Internet self-efficacy. Socio-cultural factors, which were the result of gendered role definitions of being a woman in the culture to which they belonged also hampered the student's Internet usage.

A significant area that the research findings contribute to the theoretical field of ICT4D is the psychological factors that bring the second order digital divide. This is currently not much focused in the literature, especially in the Indian context. The psychological factors identified in this research like technophobia, Internet self-efficacy and motivation to use Internet all influence a woman's Internet usage. These issues have to be addressed while designing ICT4D programs. If a woman has Internet anxiety that leads to technophobia that bring low Internet self-efficacy levels which in turn leads to low motivation levels to use the Internet, she will not use the Internet even if there is ample access.

The literature on ICT4D in an Indian context mainly focuses on the first order effects in which emphasis is placed on reducing the divide by making available ICT access to those who do not have it. Findings from this research recommend that emphasis should also be equally placed on the second order effects. Providing access is not all about addressing issues related to first order divide where focus in on providing infrastructure so as to bridge the divide. Equal attention should also be given on finding out the factors which constrain the women from making use of the available Internet facilities.

The research also contributes some recommendations for universities and the government on what possible measures could be taken to facilitate Internet usage among women students in an Indian context. These include both addressing the first order and second order effects. Based on these findings, the research proposes the following measures to be taken by the Government so as to facilitate Internet usage especially in the educational sector:

- Give more priority to the field of ICT than what is already given in the educational sector, in the form of more computerization and wireless and networking facilities in the educational institutions.
- Consideration for the student strength of the universities. Decisions about the number of computers that will be provided with sufficient Internet connections should be made so as to reduce the gap in the student-to-computer ratio.
- Place more emphasis on the practical usage of ICT in primary classes.
- Capacity building efforts at the primary education level with focus on ICT-based training for primary teachers.
- More Internet access centers run by women with low costs that will bring more women users to these facilities.
- Training and workshops through educational institutions or possibly through Non-Governmental Organizations (NGO's) addressing the psychological barriers that influence a woman's Internet usage.
- Motivational and inspirational talks from women from other walks of life which can make the students aware of value of the Internet and how it can open the windows for different opportunities and possibilities.

Since the universities are under the direct control of the government, the policy changes and measures taken at the government level will influence and impact the universities. This is because the curriculum, teaching methods, and infrastructural funding are all based on government decisions and policies. However, universities and the research panels and bodies within the universities can bring recommendations to the government to facilitate technology-based learning environments. This might take time and while it may not be possible to bring about a radical change, small steps can be made so that universities are technologically and pedagogical efficient and well-prepared for the coming generation of students.

How can women be empowered through learning to use the Internet?: The second research question that the research was seeking answers for was how women can be empowered through learning to use the Internet in a developing country context. The research shows how a project by embracing the social embeddedness perspective of development can bring answers to the issues of second order divide by focusing on developing the social and human capital of the women users which influences their Internet usage there by bringing empowerment. Social embeddedness perspective of development places significance on the social dynamics in the context of the study

(Avgerou, 2010). The research takes into consideration what the social embeddedness perspective gives emphasis on like the cognitive and emotional capacities of the participants in the local context and focusing on what is meaningful and acceptable locally so as to bring empowerment through the ICT tool Internet. These findings show that women in a developing context can certainly be empowered through using the Internet. By knowing how to use the Internet, women can reap the benefits of this information age which can improve their quality of life.

The research findings show that designing the intervention that can provide a supportive and conducive environment can bring empowerment for the women participants. Opportunities have to be provided where in participants can have direct engagement with learning and using the various Internet tools and applications and also for sharing the learning experiences with in the group. What the research also shows is how to analyze empowerment as a process as well as an outcome. The process of empowerment in this research was perceived as how students identified themselves being an Internet user within the imagined community of the Internet world. This findings provides insights to the ICT4D scholars as how the theoretical underpinning of identity can help to conceptualize the empowering process for the participants through learning to use the Internet as how they develop a sense of belonging to the Internet world and how they value the Internet further which can make learning more effective and bring empowerment for them.

The research also throws light on how empowerment outcomes can be measured through the analytical framework of measuring empowerment (ME framework). What the research shows is that by focusing on agency that is the participants' ability to make choices to use the Internet, the framework can provide the scope for ICT4D scholars to measure the desired change through framing context specific indicators. The findings from the research shows that there is no universally accepted method for measuring empowerment. When it comes to empowering the women users through Internet, they can be empowered through skills and knowledge as well as other psychological and behavioral factors which influence their Internet usage. Empowerment through Internet can be also through facilitating opportunities to construct identity as an Internet user as discussed earlier.

The research also shows how the ME framework provide the scope to analyze if there is an opportunity structure available for the participants to use the acquired competencies through the training

and workshops. This element of the framework is very significant for projects which are aimed at empowering the women users through Internet or any other ICT tool because if the participants does not have the opportunity structure to use the acquired skills and competencies through the intervention then it can be challenging to make the developmental aims of the project sustainable in the long run. The research also shows that this framework can be used for measuring empowerment of participants in small-scale projects.

The core of the research was to empower women at the micro level and was an interplay of ICT, gender, Internet and culture in an Indian context. The findings of the research show that the Internet as an ICT tool does bring empowerment for women users at the micro level. Indicators of what empowerment means in regards to learning to use the Internet for the women participants has to be developed and a multi-disciplinary approach could be adopted for framing indicators so as to capture the overall essence of what empowerment through learning to use the Internet means for the participants under the study. The research would recommend that international developmental organizations that allocate funds for the ICT4D-based projects intended for women users in a South Asian Context should focus on Internet as a powerful ICT tool that can bring empowerment which can make them efficient for this information age.

What are the issues that need to be considered when designing learning to use the Internet by women users intended for their empowerment in a developing country context?: The third research question was about what issues need to be considered when designing Internet learning intended for women users in developing countries. The design that the research proposes is based on the need for more user-centered designs so as to address the digital divide. Through this design dimension, what the research contributes to the community of HCI4D is a design based on the learning element of the Internet as an ICT tool which has been discussed in detail in Chapter 8. Based on the theoretical and empirical findings of the research there are some design issues which I would recommend.

The first design dimension recommended through the research is to have an understanding of the background information of the participants. Demographic data, background information about the Internet access and usage and socio-cultural factors which constraints the women's Internet access should be collected and this background information can be considered as the foundation for the project.

Another design dimension that the research recommends is getting to know the values and beliefs the participants have about Internet and why the Internet is going to be useful for the participants. This approach in considering the values and beliefs of the women in regards to using the Internet in an ICT4D scenario is significant because women's perceptions of Internet differ from culture to culture and they value the Internet differently. If the women users does not value and believe in the technology per se then the training strategies have to take a different approach in terms of focusing more on making them aware of the Internet and what the Internet can possibly bring into their lives. This is of utmost relevance in an Indian context with the country's socio-cultural diversity including 14 official languages, 28 states and different economic and educational conditions.

Project designers should also take into consideration why the Internet is going to be the best fit for the intended participants. How the Internet is going to be useful for women will change depending on the different socio-economic strata that she comes from. The research takes the position that the theoretical underpinning of Information Ecologies by Nardi & O'Day (1999) can provide insights for designers of ICT in a developing context about how people value the Internet, what perceptions people hold about Internet usage, and why the Internet is going to be useful for the women participants in the research context.

The information ecology approach recommended in this research can bring new dimensions to the field of ICT4D. This approach can facilitate connecting the needs of women participants in terms of skills to use the Internet and designing an intervention to match these needs. This aspect of the design provides the scope for taking into account how the Internet is going to benefit the targeted women users under the study. ICT4D projects often fail because not much attention is given to how the intended participants value the ICT in question and what beliefs they have about the technology that is going to be introduced. This research has shown that values and beliefs that women have about the Internet are influenced by the culturally defined gendered roles. Further more, designers should also consider why learning to use these lifelong skills is important for the project participants related to their personal, social and professional ideas and expectations which can improve their quality of life.

Another significant element of the design which is an important aspect seen from a second order divide perspective is that the design should provide opportunities for identity work and should focus on the social and cultural practices of the context where learning is happening. In this research the participants were given opportunities for constructing

their identities as Internet users in relation to the Internet world. Findings from the research supports the socio-cultural learning theory developed by Wenger (1998) that it is as important to provide space for and focus on how the participants construct identities and develop a sense of belonging to the Internet world and the Internet training and workshops is not only about the acquisition of skills and knowledge. Wenger's framework has been adopted in many different studies and this study confirms that this framework also works well in this ICT4D context. The research recommends that the design for learning about the Internet in an ICT4D context should provide opportunities for engagement, imagination and alignment. Applying this theoretical perspective will enable designers and scholars to design for how the participants experience Internet usage and how they understand and perceive themselves as Internet users, which can make teaching and learning more effective for the participants.

Another significant research finding that contributes to one of the elements of the proposed design is the need for gender sensitive trainings. The research shows that training and capacity building sessions can empower the women users by providing the necessary support and motivation to use the Internet. Based on the empirical findings, the research would recommend that in a design for learning intended for women users in an ICT4D context, it should be seriously considered to assign a woman trainer or facilitator. This can make the participants more comfortable and at ease, which in turn can make the intervention more effective. However, gender sensitivity should not be confined with providing a woman trainer and the researchers should also consider the gendered role definitions which can influence the mobility and cause time constraints for the participants in attending the training and workshops even with a woman trainer.

Thus, what I put forward through this research is fundamentally a design for Internet learning which emphasize on the need for addressing the socio-cultural dimensions of learning. This design dimension can provide a new perspective on looking at the phenomenon of digital divide where the issues that should be taken into account in addressing the digital divide is not confined to demographic variables and infrastructural facilities. Emphasis on the socio-cultural learning approach can bring more effective results, as the results of the intervention are seen mainly through the process and not the end results. This matches the ubiquitous nature of the Internet as a technology not to be viewed as a product; learning to use the Internet should be all about the process and not the end results. Focusing on learning can bring in new directions and perspectives to address the second order divide issues in a developing context.

9.2 Reflecting on the Theory

Since the primary focus of the research was the empowerment of women through learning to use the Internet, the theoretical underpinnings of what empowerment means in this research context was very significant. The research would take the position that defining what empowerment means for the participants in the project or research is very important because empowerment is widely used in different fields of studies. Because of the complexity of the term and the different ways it is described in literature, through this research I have illustrated the need for taking a theoretical stand on what empowerment through learning to use the Internet means for the participants in this context of the research.

The research would take the position that any ICT4D-based projects that have empowerment as a developmental goal should consider three fundamental theoretical concepts of empowerment: 1) level of empowerment, 2) empowerment as a process and/or outcome and 3) framing empowerment indicators. This differentiation is important because it will help in determining how does empowerment happen for the participants through learning to use the Internet in the specific cultural context. The level of empowerment could be on personal transformation of the individual members and/or it could also be the collective empowerment of the group. The process/outcome differentiation of the theory of empowerment help in prioritizing the development as a process or an outcome or as both, as seen in this research context. While process-based studies are found more in the theoretical studies of empowerment, not much focus is there on the process and outcome-based empowerment studies especially with in the ICT4D projects. What the research contributes to the theory is that the empowerment of the project participants can be perceived both as a process as well as an outcome.

Another theoretical contribution to the field of empowerment through the research is about the criteria for developing the context specific indicators of empowerment through learning to use the Internet. The research has used a multidisciplinary approach in framing the indicators and has illustrated what these indicators mean theoretically. I would advocate that the theoretical underpinnings from other disciplines should be considered while developing context specific indicators so as to capture the overall essence of what empowerment through learning to use the Internet means for the participants in the specific context.

This can also help viewing the issues of inequality in Internet access from broader theoretical unexplored angles. Empowerment indicators can especially help the developmental organizations, managers, and scholars, document the project goals and how the goals have been accomplished for future reference.

The research draws on Wenger's social learning theory of Communities of Practice. Since the research was happening in a developing context, a learning theory that addresses and is reflective of the socio-cultural aspect of learning was required. The theory of CoP and the fundamental principle that learning is situated helped me to address this issue of second order divide which the research was focusing upon. Further more the notion of learning as "becoming an Internet user" helped the students in realizing the familiar and the unfamiliar in terms of Internet competence and also how one must negotiate multiple identities to become an Internet user. Discussing the idea of multiple identities helped them to realize how they have to negotiate these identities and that maintaining an identity as an Internet user requires work. The theory of CoP helped to illustrate how students in the research developed a sense of belonging to the Internet world, making them conscious of the new opportunities in life that the Internet can bring. This is viewed as gaining "power within" from an empowerment perspective.

The research contributes to the field of ICT4D a new understanding of integrating the three theoretical underpinnings of Communities of Practice, ICT4D, and empowerment to address the second order digital divide. The focus on "belonging" rather than the "ability" is very fundamental and new to the ICT4D literature. The conceptualization of how constructing identities is seen as gaining "power within" for the participants is also a new take on viewing the process of empowerment. Thus the research shows how these three theoretical perspectives can be applied in projects that have the aim of empowering the women users through learning to use the Internet or any other ICT tool to address the issues of second order divide.

The interventions which use empowerment strategies aiming at enhancing agency, which is the capacity to make use of the available Internet usage through learning how to use the Internet, can be informed by the CoP theory. The construct of agency can be better understood through the theoretical perspective of Wenger's learning theory where agency is understood as gaining human, socio-cultural and psychological capabilities to use the Internet. This provides a new approach to integrating the human, socio-cultural and psychological elements that represents agency for the project participants with the

deeply embedded social practices of the context where the learning is happening. The approach of viewing empowering outcomes which is about acquiring the ability to use the Internet as the result of empowering process which is constructing identity through learning is a new approach to the theoretical field of empowerment.

9.3 Reflecting On the Methodology

The research methodology adopted was ethnographic action research. Even though this methodology has been specifically aimed at projects in developing context, the application of this methodology in ICT4D research is very negligible as it is new to the field. The empirical evidence from this research shows that ethnographic action research as a methodology is well suited for projects aimed at closing the digital divide in using the Internet in developing regions. Both ethnography and action research allowed me to understand, take into consideration, and be sensitive to the social and cultural elements that constituted the research context. The research had a pragmatic approach which is about what works best to bring stronger evidence to answer the research questions and the methodology of ethnographic-action research allowed me to adopt mixed methods and gave more breadth and scope for answering the research problems. Ethnographic-action research is one of the research methods that allow adopting mixed methods of data collection.

Ethnography allowed me to get an overview of the deeply embedded socio-cultural factors that kept the participants away from using the Internet and the socio-cultural composition of the research context, which gave a starting point for the research. Ethnography allowed me to get data on the perceptions and attitudes of the students towards using the Internet and how they valued the Internet. Participant observation in ethnography is about being in the social world of the participants. Thus ethnography allowed me to experience the reality as the students did in the field. It also helped to get an in-depth understanding of the gendered roles defined by the patriarchal structure of the society that the students belonged to, which was possible through the informal conversational interviews which ethnography provided scope for.

Action research helped in building a project that facilitated the students to learn to use the Internet from each other in the group. Action research helped in bringing the desired change through using the Internet for the participants through the interventions. The research demanded high levels of user participation as it was about learning to use the Internet and involved learning by doing. The reflective

approach and the cycle of plan, act, and reflect in the action research methodology helped to make the participants reflect on the process of Internet search and to learn from each other in the group through discussing the Internet learning activities. This participative and reflective aspect of action research made learning to use the Internet more effective than when they are given traditional face-to-face training which would have made the learning unexciting. In addition, by observing the change happening to the students through learning to use the Internet and through documentation, flexibility was provided to improve the project to bring better results.

Thus findings from the research provide guidelines to the policyholders and scholars in the field of ICT4D on how the methodology can be used for projects aimed at empowering women participants through using the Internet. The application of this research methodology in this research context should be seen as guidelines for using it in other similar research contexts. It should be adapted to the research conditions since each project will have unique characteristics in terms of participants' locality, culture, attitudes, and usage levels of Internet or other ICT tools. Thus consideration has to be given on what will work and what will not work in the intended context.

Since the research methodology is a combination of two methodologies, a reflection on how these two contribute separately to the field of ICT4D is imperative. Ethnography has been used widely in studies done in developing context; however, the use of action research as a research methodology is not much explored in the field of ICT4D. The research shows that the fundamental elements of action research such as, being positioned in real world situations, providing a great amount of flexibility to meet unexpected contingencies, cultural sensitivity towards the values and culture of the participants, emancipatory and empowering emphasis, and its emergent and data driven nature make it a suitable methodology for ICT4D research studies which are mostly intervention oriented and in real world situations with real world problems, in highly constrained situations.

One of the drawbacks the research methodology has when it has to be applied in a developing context is its demand for significant amount of interactions, reflections and dialogue from the project participants in order to generate knowledge. One of the challenges that I faced in this research was that since the participants in the research context were coming from small towns, some of them appeared to be reserved and shy and were not vocal in the discussions. The process of reflections and shared learning was novel to them which made them little anxious. This can be a problem for similar projects in the field of ICT4D

aimed at bridging the digital divide with women participants. This is because participants will be coming from small towns and villages, as it is expected that women from affluent and educated sections in a developing country have privileges to use the Internet. Women participants, especially from the small towns and rural villages, are withdrawn and shy because Indian culture is predominantly patriarchal and women often are conservative. So these types of reflections and interactions can be quite intimidating for them and they may not be vocal in the discussions in an open forum. If the methodology has to be adopted, the project managers and scholars should provide a highly informal, supportive, and encouraging environment in the project for the participants to gain the confidence to speak without inhibitions.

9.4 Reflecting on the Intervention Design

In any ICT4D research, field studies play a significant role in achieving the developmental outcome through interventions in real life situations. How an intervention is designed does influence the success of the project. The research findings show that the intervention designed in this research to address the second order divide which has a participatory, action-led, bottom-up approach with an empowerment goal can bring the desired developmental outcome. In this research, the intervention model that has been used in the field was comprised of a future workshop, Internet training sessions, action research workshops, and an evaluation workshop. This intervention-oriented design used in the research can provide the scholars not only the opportunity to study the social phenomenon of the digital divide and an understanding of what keeps women users from the Internet, but also how an intervention can bring down the digital divide in using Internet among women users in a developing context. This approach is new in the field of ICT4D.

Future workshops were an effective technique that helped me understand the barriers that kept women students away from the Internet in this research. The future workshop also helped me to get a picture of the students' worries, dreams, and hopes. Through the findings from this research it can be concluded that even though future workshops are a western approach, they can be successfully applied in an ICT4D context in South Asia. Future workshops can help the scholars bring in a democratic way of finding the problems which makes Internet access difficult. These workshops also provide the scope for finding out from participants themselves what could be the solutions to the problems, thus providing a different perspective than a standard questionnaire or structured interview. Future workshops can

also help the ICT4D scholars understand how the participants imagine themselves as Internet users and what strategies they feel could accomplish such a scenario from the participants' perspectives. One of the best features of future workshops, which make them suitable for the projects aimed at women in an ICT4D context, is that they are a great technique to make the less articulate members participate. As women from rural areas and small towns could be conservative because of gendered role definitions in the culture, getting them to speak might be sometimes challenging. Future workshops can help generate ideas from the women participants through sticky notes and techniques like drawing which can help the participants to bring out ideas, concerns and perspectives that might not be stated when they are asked to speak.

In this research context the training was designed based on Bloom's Digital Taxonomy, providing a new perspective to the training programs. The focus of Bloom's digital taxonomy is on the thinking skills necessary to use the Internet rather than the content of the Internet. This approach to training contributes to the field of ICT4D to bring more effective results for projects that are based on helping participants learn to use the Internet, where the focus is on how the participants are learning to use the Internet thus acquiring a lifelong skill rather than focusing too much on the content of the Internet which changes with time. Bloom's digital taxonomy can help scholars and project managers have a common learning goal for participants in the study. It also allows for choosing the Internet activities for learning from the least complicated activities to the more complex activities as the participants' learning progresses.

In this research, action research workshops facilitated a platform wherein students shared and reflected on their Internet usage and learning experiences. The model of conducting action research workshops after each training session, helped the students to recall the learning faster. If the workshops were designed to be conducted after all the training sessions were completed it would have been difficult for the students to recall what they had learned in the training sessions conducted several weeks before.

Overall, this approach of intervention can bring the desired developmental outcome as it can help the participants become more involved in the whole program and make them more motivated than a traditional technical-oriented training. However, when doing this kind of an intervention, the researcher has to be prepared to face a number of challenges. Cultural, technical or infrastructural constraints and also donning the hat of multiple roles that of a trainer, researcher and a

"friend" can be very challenging in the field. These constraints and challenges are unavoidable and I would recommend that researchers should be prepared to face such challenges while doing the intervention and also to adopt a research methodology that provides for flexibility to respond to unforeseen contingencies which emerge in the field studies.

9.5 Future Research

There are some areas identified that provide scope for further research based on this study. There is a possibility of further exploring the socio-cultural aspects that bring in the digital divide because of gendered role definitions. Further research on what can be possibly done to address these socio-cultural aspects can be done by adding some reflection from the Internet café owners on what changes could be brought to bring in a favorable atmosphere so that more women users can make use of the facility, especially in the evenings. The research did not provide the scope to address this issue and a new perspective on addressing the socio-cultural factors that influence the use of public Internet cafés could bring a new outlook for addressing the digital divide.

Research on the psychological drives that influences Internet usage resulting in digital divide is not much focused in the ICT4D literature especially in an Indian context. The research has identified three factors that influence Internet usage: technophobia, Internet self-efficacy, and motivation. There is scope for further research to focus on more psychological barriers that can influence the Internet usage of the women users in a developing context. How these psychological factors come as barriers for women's' Internet use and what strategies and plans should be deployed to overcome these barriers can bring new insights.

Another area that can be further researched based on this study is how Wenger's CoP can be applied to an existing CoP in a developing context. In this research the group of students coming to learn together to use the Internet was not an existing CoP. The research provided structural and epistemic components to provide interactions and engagement and was an indirectly seeded CoP. However, new insights can be provided to the field of ICT4D by applying Wenger's framework to groups who are coming together to learn to use the Internet or any ICT tool. In addition, focusing on learning as formation of identity can bring effective results than viewing learning as in abstract.

9.6 Final Comments

The research hopes to fill the gap identified in the literature on ICT4D through an intervention-oriented mixed methods approach on how to empower the women users through Internet usage, thus focusing on the issue of second order digital divide where the participants were not making use of the available Internet access. The research also brought new insights such as how an intervention can not only provide information about the social phenomenon of digital divide but also bring in a change for participants through an ethnographic action research approach which is novel to the field of ICT4D. Another significant area that the research contributes is the need for paying attention to the psychological barrier that brings in second order divide. The research also opens new windows to view informal learning happening in ICT4D projects by providing empirical evidence on how CoP can provide a vocabulary for ICT4D scholars to address and view the learning process as constructing identities. The findings from the research can help the policyholders and scholars in the field of ICT4D have an understanding of how women can be empowered through learning to use the Internet in a developing context and what factors need to be considered while designing learning to use the Internet for women users in a developing region. The research also shows that small-scale projects at the micro level with limited participants can make the learning more effective and bring the desired developmental outcomes to bridge the digital divide.

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