Lokaverkefni til B.Ed. -prófs

How London Bridge was built in Iceland

Early Childhood Learning Experiences Through the use of Computer Mediated Communication

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Abstract

This study explores the use of computer mediated communication (CMC) between two early years settings; one in London, England and the other in Reykjavik, Iceland. The purpose of this study was to investigate how children might learn through the use of CMC. This study was conducted from August 2006 through April 2007. The qualitative form of action research was used to study 23 children and two early years educators in their natural environments. Through this study it was discovered that the use of CMC formed a platform for exploration, where children learned about new technologies and used those to extend their understanding of their own immediate environment and that of a partner early years setting. The study concluded that children and adults used the technology to develop new knowledge and extend their learning. The study also concluded with recommendations about incorporating this into the early years curriculum.

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I Introduction

Communication in its simplest form is a method for transmitting information from one person to another. In early childhood education communication is the key component of the learning process. The communication which takes place between child and educator is immeasurable. "*Pestalozzi is usually considered to be the modern educator who most influenced his contemporaries and the public attitudes about classrooms in which the children and the teacher both initiate* and *respond*." (Hewes.1992:5) Simply put, Pestalozzi placed communication between child and educator at the forefront of the learning process. In this piece of action research children were not only encouraged to initiate and respond with teacher and peers, this communication was considered to be the platform from which children would be able to acquire knew knowledge.

Communication methods have changed vastly from the days when Pestalozzi expounded his theories on education. Today the methods for transfer of information through communication are continuously developing and changing, at rates which make it difficult for educators to decide which methods are best suited for classroom use. For example computers in the early childhood classroom have taken on a role of communication facilitator and information transferor "...*the computer has evolved from being a teaching machine to the being a tool to support learning and ultimately into a means of instigating communication from a local to global scale*." (Easingwood. 2000:45)

"*Computer Mediated Communication (CMC) can be defined broadly as any form of data exchange across two or more networked computers. More frequently, the term is narrowed to include only those communications that occur via computer-mediated formats (i.e., instant*

messages, e-mails, chat rooms) between two or more individuals." (Wikipedia.2007:para.1)

Though there are many studies involving computer mediated communication in education today it is an option very little explored in early childhood settings. So, why use computer mediated communication in the early childhood setting? Before children arrive at pre-school, they may have been introduced to computer mediated communication in their homes and developed their own ideas and questions about the internet, e-mail, or even instant text messages. John Dewey wrote of the need for education to begin with *"learners' passions and questions".* (Dewey. 1963:3). Today's advancements in technologies and communication methods provoke children's questions and further exploration.

"Computer-mediated communication (CMC) promotes a type of interaction that is often lacking in the traditional teacher-based classroom. It allows learners the freedom to explore alternative pathways to find and develop their own style of learning." (Berge and Collins. 1995:3)

The purpose of this study was to research:

How the use of computer mediated communication supports children's learning in an early years setting?

II Background

The premise for this research resulted from a visit by a group of 23 early childhood professionals from Múlaborg pre-school in Reykjavík, Iceland to London. The purpose of this trip was to learn about the practices and methods being used in early childhood education in Great Britain. The group visited various nurseries within Westminster Children's Society (WCS). Finding that the WCS nurseries and Múlaborg were using similar curricula, it was thought that to have further contact and perhaps arrange

for the WCS professionals to visit Iceland could be beneficial to both parties. Within the following months a correspondence developed between London and Iceland. Through this correspondence a discussion developed about the possibilities of using e-mail correspondence with the children. It was decided to experiment by exploring cultural differences from the safety and comfort of the classroom.

This computer mediated correspondence began with the sharing of children's thoughts, ideas and experiences within their own culture through e-mailing messages and photographs between London and Reykjavík. As the correspondence developed it became apparent that children concentrated more on the similarities between cultures rather than the differences. From this first attempt at computer mediated communication between schools it was decided to continue the research in a more structured form to try and understand how children were actually learning through this communication. The idea was to take a closer look at the environment and its relevance to computer mediated communication. It was also important to concentrate on the adult and how they might encourage learning through this process.

According to Vygotsky's (1978) socio-cultural theory, learning is facilitated through interaction with the social environment. Communication is an important mediation tool in learning. People learn through social and cultural interactions. Vygotsky's concept of the "Zone of Proximal Development" (ZPD) describes the gap between what learners can accomplish independently and what learners can accomplish when provided external support. It is believed that learning occurs when the gap between independent accomplishments and those accomplished through support is bridged. The gap can be bridged with support from adults, peers, or artefacts. When children are involved in discussion be it face to face or through a computer mediated format, they are challenged to

explore things of which they perhaps had no prior knowledge. The use of computer mediated communication in the early childhood setting opened up the opportunity to introduce this type of exploration. *"ZPD is formed not just within an individual learner, but in the interaction between the learner, co-participants, and available tools during involvement in a common activity. ZPD's therefore, depend on the quality of the total interactive context as well as individual learner capabilities."* (Bonk and Cunningham.1998:37)

III Methodology

This research project was conducted through action research. Action research is a growing method of study in the field of education. Action research is a type of applied research which is designed to test theories and other ideas in the context of naturally occurring educational settings. The intention of action research is most often to improve practice in the classroom or school. Educators take on the role of researcher in action research studies. The educator designs and carries out the research in the context of normal social settings within their classrooms or schools, in order to improve practice.

"…action research is more than the traditional interpretative research in the sense that the researcher is directly involved in the research setting and in the experience itself and has direct impact on the events being studied. The usefulness of action research lies in the empirical and research evidence, which can support educationalists to better understand and learn from their own practice through the investigation of different perspectives and rehearsal and test of responses to them." (McPherson. and Baptista. 2004:8)

Action research is not without its critics. The most common argument against action research is the lack of scientific rigour. Because of the fact that the researcher is continuously monitoring and evaluating the subject matter it is therefore susceptible to changes, re-definitions, or modifications which most often create some benefit to the ongoing process. *"Unlike other methods, no attempt is made to identify one particular factor and study it in isolation, divorced from the context giving it meaning. That the findings are applied immediately, then, or in the short term is another important characteristic."* (Cohen and Manion.1980:178)

However, in this case action research was the chosen method because firstly the educators involved had a vested interest in taking an active role in initiating and evaluating learning as it happened in the natural social setting. Secondly it was believed by the educators that in order to develop an applied understanding of learning it would be best conducted by active participants. Thirdly, and as was mentioned before, there has been little exploration into the use of computer mediated communication in the field of early childhood education; it was therefore believed that the results and understanding developed through this type of research might promote further exploration.

It is arguable that it would have been possible to carry out this project as a case study with data collection through observation and participant interviews. In his book on classroom research Hopkins (1985) says that action research is a method which works to develop teacher's professional expertise and judgement. He puts forth the idea that the teacher's primary job is to teach and that methods for data collection should not be too demanding of the teacher's time, and that methodology used for research must be reliable enough to enable teachers to develop strategies applicable to their classroom situation. If this project was to be implemented through observation and interviews the educators involved

would have to take time away from teaching and invest it into data collection. Having used action research for this particular project the educators-researchers were presented with the opportunity to teach and collect data through the computer meditated communication (CMC) sessions. As well as being able to teach the educators were able to apply what they have learned through evaluation and research to their specific classroom settings.

The model used for this particular project was based on the design set out by Coghlan and Barnnick. Coghlan and Barnick (2001) who suggest that in order for action research to be effective as a research methodology, it must consist of a series of spiral research cycles, starting with a process of identifying a problem area - a pre-step often based on the researcher's previous experience in the field. The cycle is composed of the following components:

1. Diagnosis (data gathering, analysis and representation)
2. Action planning (participants, context, setting)
3. Action taking (process of gathering information as it happens)
4. Action evaluation (critiquing, reflection, feedback, new questions, and solutions)

Steps 1-4 in the cycle are repeated throughout the research process making it possible for the researcher to make the necessary modifications and adjustments in order to learn how best to improve practice.
"This type of research embodies the principles of pragmatism applied to research by providing an approach for knowledge creation, reflection, understanding and application in action. Therefore, action research may well be an ideal vehicle for practitioner-oriented innovative thinking in the context of online learning, by allowing the design and development of new learning and teaching approaches using ICT and enabling feedback and

participation of both tutors and learners." (McPherson. and Baptista. 2004:10)

Step 1: Diagnosis (data gathering analysis and representation).

The project was carried out between two schools one located in Reykjavík, Iceland (Múlaborg) and the other a WCS nursery in London, England (Carlton Hill). Research was carried out through weekly sessions from August of 2006 through to April of 2007, using e-mail or instant messaging through Microsoft Networking (MSN). Children were taken in small groups of three to five students for computer mediated communication (CMC) through either e-mail or instant messaging through Microsoft Networking (MSN). Each session was followed up with group discussion, creative time, or social play. Each CMC session lasted approximately thirty to forty-five minutes. The follow up session with discussion, drawing or social play lasted an undetermined amount of time. Prior to participation, parents were asked for their consent to allow their children to take part in this research and to be photographed for use in CMC between the schools.

E-mail: The children were put together in groups of three to five for each weekly CMC session. The CMC sessions consisted of composing an e-mail to be sent and most often of reading an e-mail which had been received. E-mail was composed through discussion between the children and educator. The children posed questions, made observations, replied to questions sent via e-mail or simply discussed daily happenings within their home or school. Each e-mail usually included experiences happening within the school and digital photographs sent as attachments. The photographs were used as a tool to promote further discussion and enquiry amongst the children. *"Photography is a language. The concept underlying this phrase is a very important one indeed. It leads to a better understanding of the scope and power of photography as a varied medium*

of expression and communication. Just as in the media of the written word we have poems, essays, scientific and journalistic reports, novels, dramas and catalogues-so with photography we touch the domains of science, illustration, documentation and expressive art." (Adams.1970:7)

Instant messaging: Instant messaging is method of CMC which is carried out in real time. Participants in this type of CMC need to be connected to a server through the internet at the same time. While connected it is possible to conduct conversations through text, share photographs and sound bites instantly. Additionally it is possible to telephone each other and even to conduct live video chats. Due to technical difficulties with e-mailing the decision was made to attempt having CMC sessions through instant messaging. In October of 2006 Múlaborg and Carlton Hill subscribed to accounts with Microsoft Networking Systems (MSN). The e-mail sessions were then scheduled for corresponding times, Wednesday mornings, 10:00 a.m. Sessions lasted between 20 and 30 minutes. In these sessions children were introduced to the new technology and presented with opportunities to converse directly with children from the opposite school.

Step 2: Action planning (participants, context, and setting)

Educators: Two educators took part in this research project. Jane in Reykjavik is a fourth year student at the Icelandic University for Education, studying Early Childhood Education with seven years experience working in early childhood settings. Jane is currently employed as a full time early childhood professional at Múlaborg pre-school. Mary is an Early Childhood Professional and the Centre Manager for Carlton Hill nursery. She is qualified to level 3 Early Years, is a qualified NVQ Assessor (level 3) and is currently completing her Chartered Management Institute Level Four Management Diploma.

The educator's primary role in this research project was to lead the CMC session through knowledgeable use of the ICT formats being used. Colbert (2006) states that the more children are exposed to the use and purpose of ICT's, the more complex their understanding of these technologies becomes. Significantly, the role of the adult is critical for developing ICT understandings through the process of scaffolding children's learning. Scaffolding is a term closely related to Vygotsky's theory of Zone of Proximal Development (ZPD). Grabner-Hagen, Kirkley, & Savery (1998) define scaffolding as the help, guidance, assistance, suggestions, recommendations, advice, opinions, and/or comments that an educator provides in order to help the learner master the materials and move to a higher level of understanding.

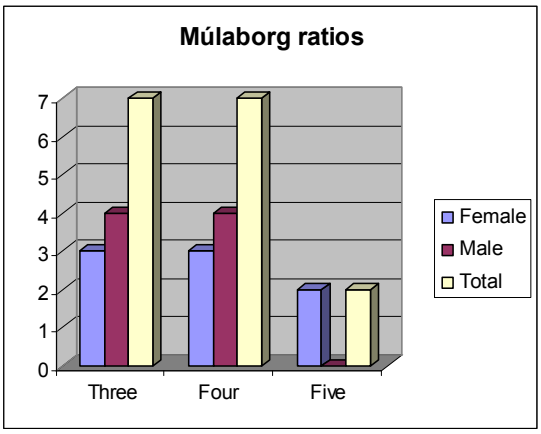
Children between the ages of three and five are just beginning to develop their literacy and communication skills. Therefore the secondary responsibility of the educators was to bridge communication between the two groups of children through the use of written language and translation, and by creating an environment which promoted learning through the CMC and follow up sessions. The intention being that through the ZPD children would develop their literacy skills and stretch into the new position of being able to read and write more in the CMC sessions.

This was an additional challenge for those adults involved in the project as reading and writing was a key issue during the CMC sessions. Being that the research aim included our intention to help the children to extend their learning during these sessions, for instance in order to be able to eventually read and write in the CMC sessions themselves; the educators assisted children by reading aloud what was communicated during the CMC sessions. Jane needed to translate the text into Icelandic in order for the children at Múlaborg pre-school to understand what was being communicated to them via e-mail or instant message. It was also

necessary to translate the information chosen by the Icelandic children into English in order for everyone at Carlton Hill nursery to understand. It should be mentioned here that Jane's native language is English.

Jane in her role as primary researcher had the additional responsibility of keeping a detailed record of data collection and worked regularly to evaluate data and practice changes throughout the process.

Children: 23 children between the ages of thee and five participated in this project; sixteen students in Reykjavík at the Múlaborg pre-school and seven in London, at Carlton Hill. In figures 1and 2 below the number of students have been broken down by age and sex.



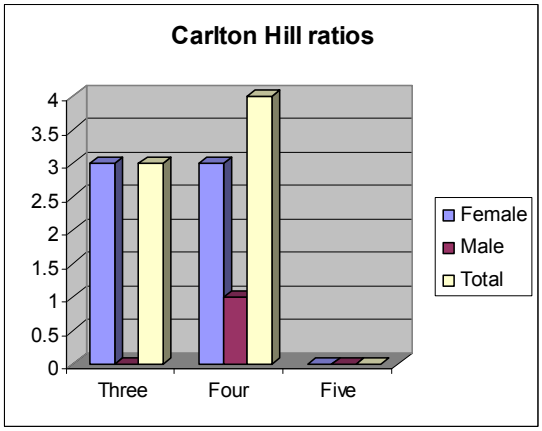


Figure 1. Age and sex range of children at Múlaborg preschool.
Figure 2. Age and sex range of children at Carlton Hill nursery

The researchers/educators worked with the children in small groups. Each group varied from session to session to allow more children to be involved in the research sessions and for the discussion around the CMC sessions to become shared knowledge for the entire classroom. According to Hoy and Tschannen-Moran (1999), group maturity, such as how well group members know each other and their comfort with each other, would affect learning process and outcomes in small group activities. Therefore the

decision was made to vary small groups in order to strengthen group maturity, as well as to deepen the understanding of CMC used in this research. One to two of the same children took part in almost every session for some consistency in order to compare rate of learning and participation within the CMC sessions.

Classroom setting and context: The educator's involved in this project believed that Vygotsky´s socio-cultural theory was not only applicable to use of the Zone of Proximal Development but also to the environment in which learning was to take place. The socio-cultural theory is based on the idea that children learn through the cultural transmission of knowledge. "*Knowledge is embodied in the actions, work, play, technology, literature, art and talk of members of a society. Only through interaction with the living representative of culture can a child come to acquire, embody and further develop that knowledge."* (Wood.1998:27) The classroom environment was altered in a manner that would hopefully promote learning through cultural interaction which takes place beyond the CMC sessions. *"But even when, in the first period of her questions, a child assimilates the names of objects in her environment, she is learning."* (Vygotsky. 1978:84)

The computer area at Múlaborg pre-school was transformed into an area which reflected all aspects of the project. For example, the walls were covered with images of London, e-mails were posted for parents and children to examine, and pictures received via-email were printed out to be posted on the walls along with pictures of children taking part in CMC session in their own classrooms. Additionally, children's drawings and digital photographs taken of children in the sessions immediately following CMC time were either posted on the walls or sent home with children in the hope of further exploration and discussion. Tourist books and stories about London were also made available to children in the classroom.

At Carlton Hill nursery the computer used in CMC sessions was located in an isolated area because there was no internet connection in the nursery areas used by children. However the computer used by children in the classroom was set up in a similar manner as the computer at Múlaborg, with pictures and displays sharing all aspects of the project. Books, stories, and maps about Iceland were also made available to children in the nursery.

In addition to Vygotsky's socio-cultural theory the educators looked also to Urie Bronfenbrenner and his *ecological systems theory* in order to apply research methods to the classroom setting. Bronfenbrenner (1979) asserts that natural environments are the major source of influence on a developing person. He felt that this fact was often overlooked, even ignored by researchers who choose to study development in artificial settings such as scientific laboratories. He describes the environment as *"a set of nested structures, each inside the next, like a set of Russian dolls"* (pg. 22). This meant that the developing person is said to be at the centre of and in fact embedded in several environmental systems, from immediate settings such as home and family (the microsystem) to broader contexts such as school (the mesosytem). It is the interaction between these systems or settings which influence development. *"Development is enhanced as a direct function of the number of structurally different settings in which the developing person participates in a variety of joint activities and primary dyads with others, particularly when these other are more mature or experienced"* (Bronfenbrenner. 1979:212)

For the purpose of this research the educators placed emphasis on creating and environment which fostered interaction between the microsytems and mesosytems. The microsystem was considered to be the child and the immediate group of children involved in the CMC sessions. The mesosystems were considered to be other children and

staff in the classroom not directly involved in the CMC sessions, home setting (parents and siblings) and finally the school which they were having CMC sessions.

Step 3. Action taking (the process of gathering information as it happens) Data was collected in various forms. Jane kept a detailed record of observations in a journal which was used during every CMC session to record observations about and conversations between the children also between her and the children. E-mails and instant messages were both saved in the computer and printed out to be put on file in sequential order. Discussions between educators were also recorded in the observational journal. Digital photographs and video were used to record creative play relating to the project. All artwork created by children was also saved in sequential order along with a written interpretation from the child as to the subject matter of the particular artwork. Jane travelled to London in December of 2006 in order to gather further data through interviewing children and staff at Carlton Hill nursery. While in London Mary and Jane went on a field trip with children to explore the London Eye. Data was again collected here through detailed written observations recorded in Jane's journal, digital photographs and video.

Step 4. Action evaluation (critiquing, reflection, feedback, questions, solutions)

"Evaluation is the collection, analysis and interpretation of information about any aspect of a programme of education and training, as part of a recognised process of judging its effectiveness, its efficiency and any other outcomes it may have." (Thorpe 1990:5)

Throughout the research process evaluation was a valuable asset and the educator-researcher relied heavily upon it. At the close of each day Jane re-read her observations in the journal in order to reflect upon the

importance of events which may have occurred during the CMC session. Jane and Mary communicated regularly either via telephone or e-mail to discuss problems that may have occurred, ideas for the next session, or simply to gather data from one another. The use of instant messaging (MSN) was a result of such evaluation. The internet connection being used by Carlton Hill nursery was working at a rate of 56k making it very difficult to send digital images or sound bites via e-mail. Mary and Jane discussed the idea of attempting the use of MSN in order to communicate while the data was being transferred. Therefore through the continual use of evaluation instant messaging through MSN was included in the CMC sessions.

IV Data and Analysis

At the outset of the project children were introduced to the idea of long distance communication through e-mail. The educators-researchers believed that in order to allow young children to develop and understanding for the concept of communicating with children who live in another part of the world, they would firstly have to introduce the idea "another part of the world". Children were introduced to Google Earth, which is an internet site where people can look at satellite images of any place on earth. This was done simultaneously at Carlton Hill and Múlaborg. Children looked at the globe, England, Iceland and at the street where the opposite setting was located. These images were then printed out and hung on the wall for further observation by the children. Additionally in this first session the children were given access to tourist books, children's stories, internet web sites, maps, and music which enabled them to explore cultural aspects of either Iceland or London. Children began to notice similarities and differences in landscape, food, customs, language, and weather. These differences and similarities which children noticed became a platform for exploration. The children began to speak openly about their observations and form questions. Dewey (1933) refers to observation as an active process. *"Observation is exploration,*

inquiry for the sake of discovering something previously hidden and unknown, this something being needed in order to reach some end, practical or theoretical." (pg.252)

The next sessions started with introducing the concept of e-mail as a method for finding answers from the children who lived in this other part of the world. Children were asked firstly if they knew what e-mail is. The majority of children said they had seen either their parents or older siblings reading e-mail in their computers at home. When the children were asked if they might want to send e-mail to the children who lived in the opposite setting, their responses were mixed. Sections of these responses are to be found here in transcripts 1-2.

Transcript 1: Múlaborg

Kalli: But we cannot spell on the computer.
Sara: I can and its okay if we have to write in English because I can speak English see Yes and No.
Halli: I want to Jane, because then we can make the children in London be our friends
Selma: But Jane, how will they know we want to send them mail in their computer?

Transcript 2: Carlton Hill

Julie: My Mummy has a computer but I never saw her sending letters in it.
Bobby: When we send a message you press the mouse and it flies to Iceland.
Lilly: But why can't we see it going?
Julie: Because it is invisible.

The first initial CMC sessions were spent sending out and answering questions the children had in relation to their observations made through the introduction of the concept of another part of the world. Transcripts 3-4 are actual excerpts from e-mails.

Transcript 3: e-mail September 25, 2006 sent from Múlaborg

Kalli wanted to ask the children if you have gone to the palace to visit the queen who lives there. We have been looking a lot at pictures of the London Eye and the children here want to know what it is for and do you go to it. Sigga thinks it looks like a big wheel at the carnival. Next week is European language week and we were wondering if you could send us a song that we could learn and sing for the other children at our school.

Transcript 4: e-mail October 6, 2006 sent from Carlton Hill

None of us have gone on the big wheel but Mary said maybe we could go one day. Today we were playing a game called "Bear Hunt" and Bobby was the bear. We are sending you a song that we like to sing here in our nursery called "London Bridges"
London Bridge is falling down, falling down, falling down London Bridge is falling down. My fair lady.

While reading the e-mail children in Reykjavik responded to each sentence as if they were responding to the children in London themselves. When they mentioned the game "Bear Hunt" children responded excitedly proclaiming that they often play the same game in circle time. It is important to mention here that when Jane read the letters aloud she read in Icelandic, also that when she wrote the questions out for children they spoke in Icelandic and she translated what they said into grammatically equivalent English. The children were ecstatic when Jane read the message that said Mary would take the children from Carlton Hill on a field trip to the London Eye. All the children at Múlaborg shouted "Me too!! I want to go to the London Eye!"

It was observed that the children began to see themselves as equals. They began referring to children at the opposite setting as their friends. When parents arrived to pick their children up they rushed excitedly to show them the latest communications received through e-mail. Jane observed that as children explained to their parents the context of e-mails there was a certain sense of familiarity. They referred to the children by name and described the attached digital photographs as if they had been

there when they were actually taken. Things that children had perceived as being possible hurdles, such as language were no longer mentioned. Children from both settings began discussing sharing toys and visiting each other. Children were developing a sense of understanding through computer mediated communication (CMC).

"A thing understood, a thing with a meaning, is different from both an idea, which is a doubtful and still unattached meaning, and from a mere brute, physical thing. I can stumble against something in the dark and get hurt without any understanding of what the thing is. So, far it is merely a thing, a something or other. If I get a light and investigate, I learn that the thing is a stool, or a coalhod, or a log of firewood. Now it is a known object, a thing understood, a thing with a meaning-all three being synonymous expressions." (Dewey. 1933:136-7)

The communication between children, put meaning and understanding into the observations they had made at the onset of the project. London Bridge became more than a picture which children in Reykjavik observed in a book, it became a song and game which children in London sang and played. The children in Reykjavík began building London Bridge with unit blocks, drawing pictures of it, playing the game and singing the song they had been taught via e-mail. Like wise the idea of eating shark meat did not seem so foreign any longer to the children at Carlton Hill, one child told her mother that she wanted shark meat with her tea and crackers. The children at Carlton Hill built an airplane in the nursery garden, in which they flew to Iceland had a snowball fight then flew back to London. Children at Carlton Hill and Múlaborg were learning things from each other. Through the CMC sessions children were interacting with another environment and people of that environment. Through this interaction they were forming ideas and making observations, which in the end translated into new knowledge.

"The positive developmental effects of participation in multiple settings are enhanced when the settings occur in cultural or sub cultural contexts that are different from each other, in terms of ethnicity, social class, age group or other background factors." (Bronfenbrenner.1979:213)

Digital image 1:

Here we see children at the Carlton Hill nursery playing in their garden. They have just received an e-mail from Iceland with pictures attached. In the pictures they could see it was snowing at Múlaborg and they wanted to go play in the snow, so they built an airplane and flew to Rekjavik in order to visit the children and play in the snow.

Digital image 2:

Here we see two children in the Múlaborg setting building a replica of London Bridge with unit blocks. They have laid a piece of blue carpet to represent the Thames River. When finished they placed small figures on the bridge representing their "friends" at Carlton Hill.

It is our belief, that play initiated through observations made within the CMC sessions, enabled children to put this new knowledge into context. Vygotsky (1978) refers to play in childhood as one of the leading factors in development. He states that through play children's actions are subordinated to meaning and when children are taking part in real

situations the opposite is true, action then dominates meaning. *"Though the play-development relationship can be compared to the instruction-development relationship, play provides a much wider background for changes in needs and consciousness. Action in the imaginative sphere, in an imaginary situation, the creation of voluntary intentions, and the formation of real-life plans and volitional motives-all appear in play and make it the highest level of preschool development"* (pg.102)

Transcript 5: sample correspondence between the two settings

Email dated November 14, 2007 from Carltonhill Nursery, London: "Hello to everyone, Writing today is Judy, Sally, Lilly, Grace, Bobby, Denise and Mary. Today is Monday. We have just read your letter. We saw you had snow. Bobby wants to know what makes snow. We don't have snow here, one day we might have snow. We are going to look at the earth on our computer again to see your nursery in Iceland. We don't know who owns the white car outside maybe it is someone who lives near us. We are all very excited that we could come to visit. Denise says we would need to take our mummies and daddies, brothers and sisters and a bit of toys and books with us, that's how she does it. (Holidays). Judy would like to know why you are not allowed treats? Denise says that the boy smiling and drawing in your photos looks like Bobby. We are sending some pictures of us looking at the earth on our computer. This afternoon we made an aeroplane in the garden and pretended we were going on a trip to Iceland. Judy was the cabin crew and gave out food. Bobby was the pilot. When we got to Iceland we said hello to the teachers and you children. We played in the snow and threw snowballs at Mary. Then we got back on the plane to London We had a lovely time. From all your friends at Carlton Hill."

Reply email dated November 15, 2007 sent from Múlaborg preschool, Iceland: "Hello everyone, Sigga says yes means já (jaw) in Icelandic. No means nei (nay) in Icelandic. Yesterday was pajama day here and everyone came to school in pajamas. And Kalli wants you to know that he did not want to wear pajamas to school that's just silly! We had a party in our gymnasium and we danced and sang in our pajamas! It was great fun. Halli says snow is just water. But Joi told us that snow is rain and some days it is rain and some days it changes into snow. And Gísli wanted you to know that when there is lots of snow he will come to school with 100 snowballs! The children said you do not need to come with all that stuff, they all agreed that you could just play with our toys and read our books. I asked them how you could read our books when they are in Icelandic

and you speak English and Joi said that you could just read it in English you don't have to read in Icelandic. Joi also says that we can not have treats in our preschool because we are not in London. I asked the children if they wanted to come and visit you and they said yes all but Gísli. He said that it takes too long to get to London and he would just sleep. I asked them what they would do in London and Sigga said she would show you how to play mamma so you know how. Halli wants to play dolls. And in the end Sigga decided it would be good to come so we could eat treats. Joi and Gísli wanted you to know that they made kites and they are going to fly them all the way to London. We are sending you pictures from our pajama party. The children wanted to know if you could send us pictures of your school and your classroom so we can see where you play.
Bye Bye for now, Mulaborg"

As the CMC sessions progressed children began sharing and wanting to know more about simple every day events at the nursery. Children wanted to send and receive pictures of them doing daily routine things. The children at Múlaborg began asking more specific questions about the children at Carlton Hill. The types of questions asked showed a genuine interest to learn more and to develop a better understanding of the children at Carlton Hill. Transcript 6 shows an example of questions asked in a discussion session which followed a CMC session.

Transcript 6: Múlaborg October 2, 2006

Fanny: Do the children in London have rabbits? And do they have turtles or frogs?
Sara: Do they have Band-Aids for when they children hurt themselves?
Halli: And do they like us?
Selma: Do they have containers for beads and crayons like we use?
Kalli: Do they paint and draw? And where are their swings in the yard?
Halli: Carlton Hill sounds almost like kartöflur (kart-uh-pl-uhr which means potato).

It was at this point in the research project when the educators-researchers made the decision to attempt the use of instant messaging through MSN. There had been difficulties in sending and receiving e-mail with attached digital images. Internet connection in London at Carlton Hill nursery had been running at a low rate of information transfer. Mary and Jane conferred via telephone that it would be beneficial to the project to attempt

the use of instant messaging, allowing the children to communicate while the images transferred. Both settings set up independent accounts with Microsoft Networking (MSN). A trial run was attempted firstly between Mary and Jane. At that particular time of the year England and Iceland were within the same global time zone, so the settings were able to schedule at time suitable to both settings, Wednesday mornings at 10:15 a.m.

There was a lot of excitement and confusion during the first MSN session. Children at Múlaborg wanted to see and learn more about the children and their setting at Carlton Hill. One of the children asked if they could send toys through the computer to share. In this first session children in the settings discussed favourite foods and Christmas preparations. Carlton Hill nursery had begun working on crafts for Christmas.

Transcript 7: portion of first MSN session November 29, 2006

Múlaborg: Sigga says her favourite food is spaghetti with meat sauce. 
Carlton Hill: Diana wants you to know that she also likes spaghetti with meat sauce too.

Carlton Hill: Bobby wanted to know if there was still snow in Iceland? 
Múlaborg: Joi says that the snow has gone now because it is raining again. Kalli wants to know if you have snow in London now.
Carlton Hill: No right now the sun is shining and we are going to go out and play in the garden.
Múlaborg: Kalli said Oh there isn't any sun here and he wants to always be in London 

Digital Image 3: MSN emotion faces used by children to respond.

It is worth noting here that directly after this particular CMC session children at Múlaborg sat together and discussed both the communication which had occurred and the use of MSN. The children were very excited about this new form of communication. The children asked if they could

draw pictures for their parents to see, pictures about Carlton Hill. They drew pictures of the cook at Carlton Hill making Diana's favorite food, a picture of Carlton Hill nursery with the sun shining brightly above, and pictures of their new friends playing at their nursery.

Children were allowed on several occasions to e-mail pictures received through MSN home to their parents e-mail addresses. Therefore bringing parents into the learning process by allowing the children to share their observations and thoughts in their home settings as well. One morning after Joi had sent home such pictures via e-mail he excitedly told Jane *"I printed out my picture of Judy from London on my computer and now it is hanging on my bedroom door at home! I can't wait to show grandma my friend in London when she comes to visit!"*

Bronfenbrenner(1979) refers in his concept of the mesosytem to the idea of linkage between settings. This link is made through participation in multiple settings, communication between settings, and knowledge about one setting being shared in another setting. Children in this study were involved in or linked with at least three different settings; home, nursery or school, and the opposite setting which they were communicating with via CMC. *"The hypothesis is based on the assumption that involvement in joint activity in a range of settings requires the developing person to adapt to a variety of people, tasks, and situations, thus increasing the scope and flexibility of his cognitive competence and social skills."* (pg.212)

The CMC sessions using MSN never had a particular theme to them and the topic of conversation usually began with who was communicating that day. The topics of conversation were never limited as the children were encouraged to discuss freely their thoughts and pose questions. Children discussed topics such as weather, food, holidays, home life, toys and books, stickers for good behavior, and even traffic rules.

As the children were learning the use of MSN they wanted to express their views about messages sent and received. They both wanted and were in fact encouraged to send each other smiley faces and or little images which were located on the screen. The smiley faces they chose to send were images which represented their emotional responses to what they were communicating or had been communicated to them, as is visible in transcript seven.

Goleman (1995) in his book on Emotional Intelligence refers to the identification and acknowledgement of emotions and feelings as they happen as a keystone to emotional intelligence. *"..emotional intelligence: abilities such as being able to motivate oneself and persist in the face of frustrations; to control impulse and delay gratification: to regulate ones moods and keep distress from swamping the ability to think: to empathize and to hope."* (pg. 36)

The children sometimes had difficulties in understanding the technologies they were using. For instance the first time children at Múlaborg sent pictures through MSN they were afraid they would never be able to look at those same images in their computer again. One child at Carlton Hill offered to send her stickers she had received for good behavior through the computer for the well behaved children at Múlaborg to share. She would put them in an envelope so as they would not get destroyed on the way. This lack of understanding for technologies never hindered their desire to continue working with those technologies nor did it have any effect on their desire to communicate with children in the opposite setting via computer.

Even though the technologies were sometimes more than the children could understand they were however very quick to learn the use of MSN

and slowly became the leaders of these sessions. Children were able to locate their names on the computer screen understanding that either something had been said by them or was being said to them. They watched the screen for the indicator showing when the opposite setting was writing a message as well as being able to track the amount of time left for a digital image to be downloaded into the computer. Children at Múlaborg were encouraged to type their names, send smiley faces and or any other words they wanted to attempt to write. Children were able to send out communications at the close of each sentence.

During one session at Múlaborg Joi started to type his name and stopped. He said to Jane *"why don't we just call the children at Carlton Hill? See this button here it means we should call with our computer."* Jane had never considered this before and asked Joi how he knew that this was to call. He answered that he was not sure, but that because there was a picture of a telephone it must mean you can call somebody. Jane allowed Joi to click on the telephone and see what happened. Indeed the computer began to ring out just like a telephone and a small telephone appeared in the MSN screen and the telephone was moving up and down as if it were ringing. Unfortunately Carlton Hill was unable to answer due to technological difficulties.

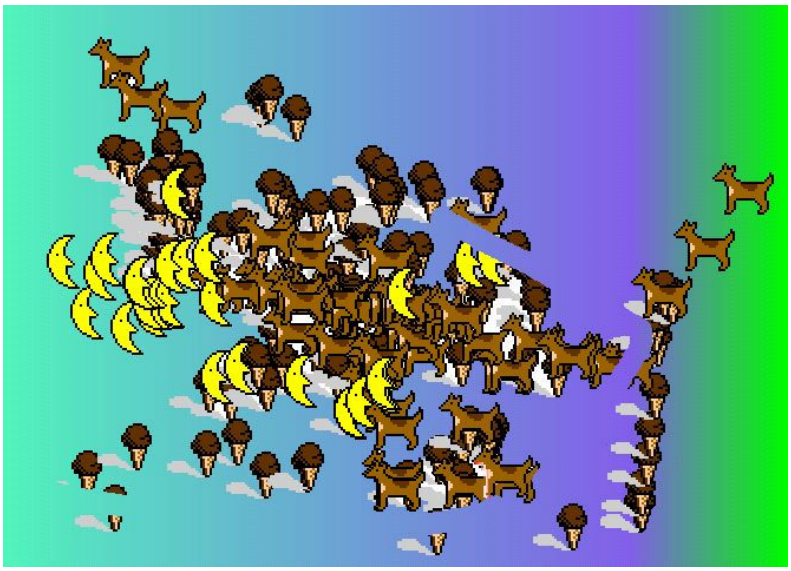
The final e-mails to be sent to Carlton Hill at the completion of this project were composed entirely by the children at Múlaborg. Children created digital images in a computer program entitled *Kid Pix* and saved them in the computer to be attached to an e-mail. The children then opened their e-mail account, clicked on "compose mail", typed in the letter "C" in the recipient area, and when the word Carlton Hill appeared they clicked on it. In the subject box each child typed their name. The children then dictated in Icelandic to Jane what they would like to say in their e-mail message. Jane repeated the message to them in English, which was followed by

exclamations of joy and laughter. With Jane's assistance the children sounded out the English words, and found the corresponding letter on the keyboard. Jane told the children when to press the space bar between words. When the children had finished typing they then attached their picture which had been saved in the computer, sent the e-mail and logged out of the e-mail account. The CMC sessions had come full circle; the children had reached the upper level of the scaffolding set forth in the beginning of the project. The children were now the able to initiate computer mediated communication on their own.

Transcript 8: selected sample of final e-mail correspondence from child at Múlaborg

hello my name is breki i am sending you a picture that i made in kid pix i call my picture wild dog picture. in icelandic that means villi hundur) bye bye for now

brrrrrrrrrrrrrrrreki



Digital Image 4: "Villi Hundur" picture composed and e-mailed by child at Múlaborg.

V Limitations

There were various issues which presented difficulties during this research project, sometimes these issues were resolvable. For instance the issue of technology; Carlton Hill was using processing speed of 56k. This was first

resolved by moving to the use of instant messaging through the use of MSN and secondly towards the end of the project the internet was upgraded to a faster processing speed, thus enabling faster and better computer mediated communication with Múlaborg. There were however other technological difficulties which were not resolvable. One such occurrence was during a CMC session using MSN when the computer at Múlaborg suddenly went off line due to a difficulty in the main server in the city of Reykjavik.

Another limitation was lack of technological understanding or familiarisation of the educator-researchers. During CMC sessions, there were times when Jane had to coach Mary on how to the use of MSN in order for the session to continue. Sometimes images would not be retrieved or sent. There were times when Carlton Hill would simply drop off line during a session. The result was that children simply lost interest and asked to leave the project in order to play.

There were often time and staffing restraints which limited the educator-researchers ability to attend to the project. Mary and Jane were the only two staff members involved in the project, therefore when they were unavailable the project did not function. Absenteeism of other staff members in the settings made it very difficult for either Mary or Jane to be able to work specifically with a small group of children. The effect was that if an e-mail was not sent out children in the opposite setting grew restless and frustrated often losing interest in taking part in CMC sessions. This occurred more often in the beginning of the project when working strictly with e-mail.

VI Conclusions

The purpose of this action research project was to consider how the use of computer mediated communication supports children's learning in an early

childhood setting. Through the use of CMC children were encouraged to make observations, ask questions, find answers and further explore both their nursery environment and that of their partner nursery. The principle underlying the project was that enabling such child initiated exploration would support and extend the children's learning. CMC gave them a new platform for this exploration and extension. By creating an opportunity for children to make comparisons between the two settings children saw similarities and differences which provoked thought and further exploration. Loveless(1995) states that constructing knowledge from information requires far more than the ability to use the technologies such as e-mail and instant messaging; but relates more to the ability to question, access, interpret, amend, analyse, construct and communicate meaning from information. Children involved in this research developed stronger language and literacy skills through the CMC sessions. For instance, they began by finding letters and numbers which they recognized and ended with typing out whole words and sentences, sometimes in another language.

"Young children who are fortunate enough to engage in authentic communicating via the internet are able to grasp fundamental concepts about language and literacy through these exchanges." (Labbo.2005:173)

Children's social skills were also increased through the use of CMC, as they began to form relationships with children in another setting believing them to be friends and equals. Rubin (1980) says that through friendships children provide each other with resources that adults cannot provide them with. Children learn to communicate successfully with each other and that this communication teaches children to empathise with each other and to imagine themselves in another child's role.

Through the use of MSN during the CMC sessions children interacted and responded directly with each other. When two children from Carlton Hill

sent a letter to Múlaborg saying that they were leaving the nursery to go to school, children at Múlaborg were sad to see them leaving and also worried about them having to go to another school. They asked many questions about how the children might feel going to school with older children who weren't their friends.

The ability to work with computers and the internet has become an important life skill. The introduction of such technologies to children in early childhood settings for the purpose of exploration and communication was a step in the right direction, for both the children and educators who took part in this research. Through this research we were able to demonstrate that education and the real world could link successfully because the context was safe and meaningful. The ability to contact people anywhere in another part of the world proved to be a powerful tool which could be added to the Early Years' teachers repertoire.

VII Recommendations

We feel that through this piece of action research we have proven that children can and do learn through the use of CMC, and that it is in fact a method well worth using in the early childhood setting. We would however recommend that in order to maximise the potential available through CMC, firstly the lead adult should have adequate knowledge and understanding of the technologies before beginning.

"It is pointless to invest in the latest computer equipment and fast connections to the internet if corresponding investments are not made in training the teachers who are to use the equipment with pupils." (Cunningham and Andersson. 1999:42).

Secondly we would recommend that in order to maximise the learning that takes place, CMC time should be scheduled into the curriculum of the

early childhood setting. This would help protect CMC time in the weekly routine but also support the children to take learning to that next level by using what is learned in the sessions and incorporating that into the settings' curriculum. For instance; when using CMC to support child-led project work, or through extending children's interests and connecting children's observations with assistance of technological access to new ideas, information and experience across the range.

Thirdly we would recommend getting the parents actively involved from the beginning stages to better imbed the learning which takes place through CMC sessions in the setting, therefore further connecting the meso and micro systems and enhancing the learning process.

References:

Adams, A. (1970). *Camera and Lens. TheCreatvie Approach.* Morgan & Morgan,Dobbs Ferry, New York.

Berge, Z. and Collins, M. (1995). "Computer-Mediated Communication and theOnline Classroom in Distance Learning". *Computer-Mediated Communi-cation Magazine.* 2(4):6-12.

Bonk, C.J. and Cunningham, D.J. (1998). "Searching for Leraner-Centered, Constructivist, and Socioocultural Components of Collaborative Educational Learning Tools." pgs. 25-50. *Electronic Collaborators. Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse.* Edited by Curtis Jay Bonk and Kira S. King. Lawrence Erlbaum, Mahwah, New Jersey.

Bronfenbrenner, U. (1979). *The Ecology of Human Development. Experiments byNature and Design.* Harvard University Press, Cambridge, Massachusetts.

Calhoun, E.M. (1994). *How to use research in the self-renewing school.* Association for Supervision and Curriculum Development, Alexandria, Virginia.

Coghlan, D. and Brannick, T. (2001). *Doing Action Research in Your Own Organization.* Sage, London.

Cohen, L. and Manion, L. (1980). *Research Methods in Education.* Croom Helm, London.

Colbert, J. (2006). *Young Children's Story Telling: Keeping it Complex: Keeping it Connected.* EECERA Democracy and Culture in Early Childhood Education Conference, Reykjavík, Iceland. September 1, 2006.

Computer Mediated – Communication. (Date unavailable)Retrieved March 2, 2007 from http://en.wikipedia.org/wiki/Computer-Mediated communication

Cunningham, U. & Andersson, S. (1999). *Teachers, Pupils and the Internet.* Stanley Thornes, Cheltenham, UK.

Dewey, J. (1933). *How We Think. A Restatement of the Relation of Reflective Thinking to the Educative Process.* D.C. Heath and Company, Chicago.

Dewey, J. (1963). *Experience and Education.* MacMillan, New York.

Easingwood,N. (2000). “Electronic Communication in the Twenty – first – centuryClassroom.” *ICT and Literacy; Information and Communications Technology, Media, Reading and Writing.* pgs. 45-57. Edited by Nikk Gamble and Nick Easingwood. Continuum, London and New York.

Goleman, D. (1995). *Emotional Intelligence. Why it can matter more than IQ.* Bantam, New York.

Grabner-Hagen, M.M., Kirkley, S.E.,& Savery, J. R. (1998). “Electronic Teaching: Extending Classroom Dialogue and Assistance Through E-mail Communication.” pgs. 209-232. *Electronic Collaborators. Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse.* Edited by Curtis Jay Bonk and Kira S. King. Lawrence Erlbaum, Mahwah, New Jersey.

Hewes, D. W. (1992). *Pestalozzi: Foster Father of Early Childhood Education.* NAEYC History Seminar, New Orleans, LA. November 12, 1992.

Hopkins, D. (1985). *A Teacher’s Guide to Classroom Research.* Open University Press, Berkshire, UK.

Hoy, A.W., & Tschannen-Moran, M. (1999). “Implications of cognitive approaches to peer learning for teacher education.” *Cognitive Perspectives on Peer Learning.* pgs. 257-284. Edited by A.M. O’Donnell and A. King. Lawrence Erlbaum , Mahwah, New Jersey.

Labbo, L.D. (2005). “Fundamental Qualities of Effective Internet Literacy Instruction: An Exploration of Worthwhile Classroom Practices.” pgs. 165-177. *Innovative Approaches to Literacy Education Using the Internet to Support New Literacies*.Edited by Rachel A. Karchmeer, Marla H. Mallette, Julia Kara-Soteriou, and Donald J. Leu, Jr. International Reading Association, Newark, Deleware.

Loveless, A. (1995). *The Role of IT:Practical Issues for Primary Teachers.* Cassell, London.

Rubin, Z. (1980). *Children’s Freindships.* Harvard University Press, Cambridge, Massachusetts.

Thorpe, M. (1990). *Evaluating Open and Distance Learning*. Harlow, Essex:Longman , Uk.

Vygotsky. L..S. (1978). *Mind In Society, The Development of Higher Psychological Processes.* Harvard University Press, Cambridge, Massachusetts.

Wood, D. (1998). *How Children Think and Learn. The Social Contexts of Cognitive Development.* Blackwell, Oxford, UK.