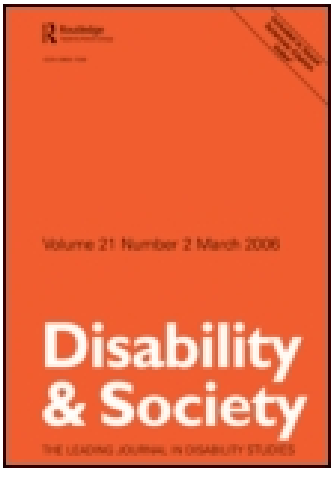

Disability & Society
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/cdso20

'I know, I can, I will try': youths and adults with intellectual disabilities in Sweden using information and communication technology in their everyday life

Rebecka Näslund [a] & Åsa Gardelli [b]

[a] Department of Business Administration , Technology and Social Sciences, Luleå University of Technology , Luleå , Sweden

[b] Department of Arts , Communication and Education, Luleå University of Technology , Luleå , Sweden

Published online: 12 Jul 2012.

To cite this article: Rebecka Näslund & Åsa Gardelli (2013) 'I know, I can, I will try': youths and adults with intellectual disabilities in Sweden using information and communication technology in their everyday life, Disability & Society, 28:1, 28-40, DOI: 10.1080/09687599.2012.695528

To link to this article: http://dx.doi.org/10.1080/09687599.2012.695528

Disability & Society, 2013
Vol. 28, No. 1, 28–40, http://dx.doi.org/10.1080/09687599.2012.695528

'I know, I can, I will try': youths and adults with intellectual disabilities in Sweden using information and communication technology in their everyday life

Rebecka Näslund[a]* and Åsa Gardelli[b]

[a]*Department of Business Administration, Technology and Social Sciences, Luleå University of Technology, Luleå, Sweden;* [b]*Department of Arts, Communication and Education, Luleå University of Technology, Luleå, Sweden*

(*Received 3 October 2011; final version received 31 January 2012*)

This study introduces how technology and humans are part of relationships that influence agency among people with disabilities. It aims to focus attention on the use of, and access to, information and communication technology (ICT), and agency among youths and adults with intellectual disabilities. The study draws on empirical research conducted with youths and adults with intellectual disabilities, as well as staff at a day centre. It shows that by drawing upon interests, previous experiences, and cooperating in ICT activities the participants' agency changed. Also, it shows how disability is relational and how it can be influenced by ICT. An interdisciplinary approach is adopted to interpret the findings and to explore: How do people of different ages with intellectual disabilities experience the use of ICT in their everyday lives? Are people with intellectual disabilities able to influence their level of activity by using ICT? And if so, in what ways?

Keywords: information and communication technology; intellectual disability; use; access; agency

Points of interest

- This article deals with use of, and access to, information and communication technology (ICT), and agency among youths and adults with intellectual disabilities in Sweden.
- Additionally it illustrates how disability is influenced by ICT; and with ICT being used as an example, it shows how people with intellectual disabilities can develop agency through support from others during sessions with ICT.
- It also introduces how people with intellectual disabilities are able to influence their levels of activity and agency by using ICT, and the ways in which this is done.
- By working with ICT tools and relating it to their own interests, the agency of the participants was further developed.
- Another importance issue for agency to develop by using ICT is to relate the use to the experiences of the participants.

*Corresponding author. Email: Rebecka.Naslund@ltu.se

Introduction

The focus of this article is on how technology and humans are part of relationships that influence agency among people with disabilities. Extensive research exists that focuses on how, from various perspectives, information and communication technology (ICT) is used by adults, youths, and children. Some of this research deals with disability and ICT, and focuses on online community discussions among people with disabilities (Anderberg 2007), while other research explores Internet use among people with mobility/physical disabilities who are familiar with computers (Anderberg and Jönsson 2005). Harris (2010, 429) conducted research that aimed: '… to explore the challenges, barriers and facilitators to acceptance and acceptability of advanced technological devices designed to assist and support independent living'. When it comes to research focusing on the use of ICT among adults and young people with disabilities, some of it focuses on the digital exclusion (Watling 2011), the circumstances that causes ICT to be socially inclusive or exclusive, and equally on the relation between ICT, identity and social relations for youths with blindness and partial sight and youths with mobility disabilities (Söderström 2009, vii). Still other research focuses on ICT and children with disabilities, the experiences, and expectations of ICT of the parents of children with disabilities (Lindstrand 2002, abstract), ICT, children with disabilities, and equal opportunities in school from the perspective of parents and children with disabilities (Brodin 2010, abstract), social relations, ICT and empowerment among people with intellectual disabilities (Renblad 2003, abstract), differences in impressions of the meaning of mobile phones in everyday lives among young people with mobility disabilities and young people without disabilities, and mobile phones' influence on youths' lives (Söderström 2011, abstract). Research also exists, such as that carried out by Moser (2003), which focuses on adults with disabilities (relating to traffic accidents), and how they become disabled and live with disability.

Compared with previous research, our study aims to focus attention on the use of, and access to, ICT, and agency among youths and adults with intellectual disabilities. Defining disability is a bit complicated according to Vehmas, Kristiansen, and Shakespeare (2009). In this article the young and adult participants are presented as people with intellectual disabilities. By wording the participants in this way, there is a risk of categorising people as belonging to a special group based on some intrinsic factor such as their individual characteristic (in this case, intellectual abilities). However, in our definition of the participants as people with intellectual disabilities, all of the participants are active agents who encounter with intellectual disabilities in their everyday lives. We take the everyday practices of their lives as the starting point rather than locating them as people with a characteristic of being intellectually disabled.

The article focuses on how technology and humans are part of relationships that influence what access to and use of ICT becomes as well as opening up for ways to talk about the relation of ICT, disability, and agency from the viewpoint of the user's everyday life. The research draws on empirical research through observations, diary notes, video recordings, photographs, drawings, and interviews among youths and adults with intellectual disabilities, as well as staff at a day centre. An interdisciplinary approach is adopted to interpret the findings and explore the research questions: How do people of different ages with intellectual disabilities experience

the use of ICT in their everyday lives? Are people with intellectual disabilities able to influence their level of activity by using ICT? And if so, in what ways?

ICT, disability, and agency

The current study draws on work within disability studies, science and technology studies, pedagogy, and health sciences. More specifically, it relates to disability as the interrelation between the individual and the wider society. Thus, we are interested in what Gustavsson, Tøssebro, and Traustadóttir (2005, 33) regard as a relational model of disability. This implies that disability is seen as a social construction which gets life in relationships between individuals, as well as in interactions between the individual and the wider society (Gustavsson, Tøssebro, and Traustadóttir 2005, 33). This suggests, as Shakespeare (2006) explains, that impairments and disability are relational rather than dichotomous. More specifically he says: 'By relational, I mean that the disability is a relationship between intrinsic factors (impairment, etc.) and extrinsic factors (environments, support systems, oppression, etc.)' (Shakespeare 2006, 57). The relational model can be seen as evolving from the earlier debates around the meaning of disability. Disability was earlier seen as caused by medical or psychological limitations and as such located within the individual, leading to the medical model of disability (Vehmas, Kristiansen, and Shakespeare 2009). In relation to this way of thinking, the social model evolved. It regards disability as having come into existence by the wider environment (Oliver 1996, 32). The relational model is a further development around the concept of disability. According to Shakespeare, it is difficult to draw a clear boundary between impairment and the disability (Shakespeare 2006, 36). It is of importance to take bodily differences and limitations as well as the surrounding environment into consideration when one explores disability.

Additionally, as a way to explore the relation between agency, disability, and technology, we strive to bring together the relational model of disability (Shakespeare 2006) with the actor-network theory (ANT) approach (Galis 2011; Law 1992, 1999; Moser 2003; Söderström 2009, 2011). For Shakespeare, disability cannot be separated as belonging to any inner or other characteristic but gets its life in the encounter between the human and the surrounding environment. This in turn is also in line with ANT, which is a theoretical approach that evolved as part of the research field of sociology of science and technology during the early 1980s (Galis 2011, 830; Law 1992, 381). According to Söderström (2011, 94): 'This perspective refuses to make *a priori* distinction between entities and actors, or define in advance what kind of entities might be granted agency and explanatory force'. For advocates of ANT, agency, for instance, gets its life as consequences of relations between the individual/society, and humans/non-humans (cf. Law 1999). Thus, according to Law, entities take shape as consequences of their associations with other entities (Law 1999, 3–4).

By working with Shakespeare's definition and ANT, it is possible to explore everyday experiences of disability, impairments, and interactions of the body with the wider environment (cf. Galis 2011). The relation between ICT and disability is not a given but is a consequence of encounters, relationships between humans and non-humans. This means that the researcher is interested in the ways disability is enacted in everyday practices of life, by interactions between the body, technology and the wider society, and as such the body, technology, and the surrounding play

mutual parts (Galis 2011). This way of exploring disability and ICT can also be related to the concept of agency. Remember that when one works with these approaches, one as a researcher does not either focus solely on the body nor solely on technological artefacts, nor on the wider society. Instead, the analysis is on situations in which encounters between bodies, artefacts and culture enables or disables the ways agency gets its life (Galis 2011, 830). Thus agency is similarly to disability, a simultaneously biological, material, and semiotic phenomenon. It gets enacted in everyday lives, in encounters between bodies, technologies, and the wider society. It is, as Moser states:

> … agency is not a capability or property that belongs inherently in some exclusive human bodies. First, in addition to humans, many things act, and are attributed agency. And second, many things act together, as agency is made possible and emerges in practices and activities that precisely link many and heterogeneous actors and elements. (Moser 2003, 158)

In the concept of agency we include the notion of subjectivity. We are inspired by Moser, who sees subjectivity in the following way: 'Likewise, subjectivity, by which I understand a location of knowing, thinking and consciousness, is not seen as an inner essence but as a relational effect.[117] It is shaped in particular ways and made possible in local material arrangements' (Moser 2003, 31). For Moser, subjectivity is not limited to the human body and mind. Instead, it comes into existence as part of relationships between various kinds of actors, practices, technical aids, carers, and policy documents, and so forth (Moser 2003, 181). For us, agency and subjectivity are created as part of people's interaction with other humans, technology, and various practices. Thus, the relation between ICT and disability is not given but is a consequence of encounters, and relationships between humans and non-humans. So, in summary, it is in everyday practice that the actors (the participants, the surrounding environment, the staff, and ICT) encounter and it is in these encounters that disability and agency get their lives.

We also argue for the fruitfulness of using the salutogenic theory and the construction 'sense of coherence' as developed by Antonovsky (1987) when tracing agency and subjectivity. The salutogenic perspective recognises the world as meaningful and predictable, and focuses on wellness factors that cause good health rather than on risk factors that cause illness or disease. Sense of coherence includes three components: comprehensibility, which refers to a belief that that life is consistent and makes sense; manageability, which is a belief that you have the ability to take care of things and that things are under your control; and meaningfulness, which is a belief that life is emotionally worthwhile and meaningful.

As a way of exploring agency and subjectivity we also work with the concept of the level of 'the zone of proximal development' as developed by Vygotsky (1978). This concept can be explained as the distance between the actual development level the person is in and the level of the possible development that could be activated through problem-solving, during the guidance in collaboration with more capable people. It is about developing abilities that have not yet matured but which are in a process of maturing. Vygotsky contends that people live in a context and that knowledge is developed in relationship to our social surroundings. A central argument of Vygotsky is that all people are active and creative and that all people are constantly developing and changing.

Moreover, we are interested in tracing how access and use come into existence and what is involved in order for them to appear. Technology is part of our everyday lives and can, in various ways, affect disability (Brodin and Lindstrand 2003; Harris 2010). Gardelli's research shows that, for the person with disabilities (the participants in her study), use of ICT was a way '… to be someone, to tell, to be seen, to mean something for someone else, to be important and to have a task …' (Gardelli 2004, 220; our translation). Her research also shows that it was not primarily disability, but rather '… technological problems around aids, economic causes, absence of support, problems with authorities and to have enough of time in everyday life as disabled …' that influenced whether the participants continued or discontinued their use of ICT (Gardelli 2004, 223; our translation). Research carried out by Näslund (2009, abstract) highlights, among other things, how pupils with intellectual disabilities live with disabilities and their consideration of disabilities and technology. Another focus of Näslund's research is on how disability becomes entangled with technology and the wider society.

Besides exploring the relation between access and use of technology, we focus on the attitudes and expectations of the surrounding having meaning for people's development (Rosenthal and Jacobson 1968). If one does not put demands on or expect something from a person, it can become a self-apparent prophecy (Merton 1968) and the person is taught to become passive. Brodin (1991) shows how important it is as to what kind of expectations the surrounding has on people with disabilities; and, according to her, expectations on people with disabilities are often low.

Methods and materials

This article is based on a secondary analysis of already collected data that have been previously presented in Gardelli and Johansson (2008) and Näslund (2009). From a re-reading of the studies we became interested in exploring: How do people of different ages with intellectual disabilities experience the use of ICT in their everyday lives? Are people with intellectual disabilities able to influence their level of activity by using ICT? And if so, in what ways?

The sample for this study is based on six youths aged 15–20 years and five adults aged 40–60 years. These two groups were chosen due to research earlier presented in this article, which has omitted a discussion of the relationship between ICT and disability and agency. The youths consisted of five boys and one girl: all of them went to special schools designed for pupils with intellectual disabilities; and they all had access to ICT in various forms, mobile phones, computers, and the Internet (Näslund 2009). All of them participated in various social activities. The youths all lived at home at the time of the study. The adult participants consisted of three men and two women: all of them had a severe intellectual disability; some of them were unable to communicate verbally, while others could. Some of the adults additionally had difficulties with mobility (Gardelli and Johansson 2008).

We were aware, similar to other researchers, of the importance of ethics when conducting social research (Codex 2011; Hammersley and Atkinson 1995; Kvale 1997; Miles and Huberman 1994). When the studies among the youths were set up, the researcher contacted the teachers and the headmasters of the school, and informed them and the other members of staff about the study (Näslund 2009, 47). People with intellectual disability and with difficulty to communicate verbally can often have problems themselves to give their consent to participate in a project.

From an ethical standpoint, this was solved in each case by informing the parent/trusteeship about the project objectives and training purposes. The school distributed a letter with information about the study and a form of letter of consent to the parents and the pupils (Näslund 2009, 47). Parent/trusteeship of the adults was also giving their oral and written consent for participation. In order to avoid the participants being identified, they were presented in the final report by fictitious names, and their ages were given to the nearest even decade. With regard to staff participation, they had the choice to do so or not. The studies have been evaluated by ethical reviews.

The materials and methods drawn upon in this article are based on observations, diary notes, video-recordings, photographs, drawings, and interviews with youths and adults with intellectual disabilities, as well as staff at a day centre. As a way to get more knowledge of the youths' access and use of ICT, field notes from participant observations and semi-structured interviews were used (Adler and Adler 1994; Flick 2002; Fontana and Frey 1994; Mason 1996; Yin 1994). Additionally, during the interviews with the pupils, they also drew pictures (Näslund 2009, 55). When talking about their pictures, the pupils' views of the computer were linked to the use of technology since most of them talked about using computers for entertainment (playing games), writing, retrieving information, and interacting and communicating with others in virtual ways (Näslund 2009, 85).

The adults' activity ability was documented during the project by the staff, who had responsibility for the respective participant (Gardelli and Johansson 2008). In order to be able to compare the possible development of abilities over time, an estimation of the level of performance of the activity with a computer, both at the start of the project and subsequently, was conducted. A template created by the project leader was used in the actual project as an additional aid. The staff's own observations were documented in diary notes after the training sessions, with descriptions and interpretations of the participants' levels of activity, together with possible signs of development. Video-recordings were conducted at the first training session and continuously during the project time. A digital camera was used in order to photograph the participant in various situations and settings. Photographs were also taken of the staff and other people who the participants were familiar with. The documentation formed a basis for the description of a participant's activity ability at the end of the project.

The analysis of the empirical material was inspired by a qualitative approach. Additionally, the analysis draws upon the relational model of disability (Gustavsson, Tøssebro, and Traustadóttir 2005; Shakespeare 2006). Also, as a way of exploring disability and agency, we analysed our material in relation to the work done by Shakespeare (2006) and by scholars following the ANT approach (Galis 2011; Moser 2003; Söderström 2009, 2011). The analysis is inspired by the work of Galis (2011), Moser (2003) and Söderström (2009, 2011) concerning the relationship between the body, technology and the wider surrounding's interactions and its relation to agency. As a way to trace changes in activity levels, the analysis is inspired both by the work of Antonovsky (1987) (the salutogenic theory) and Vygotsky (1978) (theory about the zone of proximal development). The analysis was based on a secondary analysis of already collected data. We read our previous analysis with the purpose of finding some common text units. Structural themes were then subsequently analysed by applying a thematic approach, evident in the material, as well as methodological and theoretical approaches from the study. We returned to

our own individual analysis and consideration of the material, followed by a conversation about themes, in which we differentiated between those that related to each other and those that differed. The themes we drew upon were: how people of different ages with intellectual disabilities experience the use of ICT in their everyday lives and the ways in which they are able to influence their levels of activity and agency by using ICT.

Results and concluding discussion

Agency and its relation to experiences of ICT

Agency became visible throughout the study in various ways. One instance was when we explored the previous experiences of ICT among the participants. All of the participants had various experiences of using ICT in their everyday lives before as well as during the studies. For the younger participants, their previous experience mostly involved playing games and communicating; whereas for the adults who had no previous experiences of ICT, the study increased their ways of communicating and their level of activity. Most of the youths used the Internet and mobile phones while some of them had virtual friends who they communicated with via chatrooms (Näslund 2009). For Anders, who was in his 20s, previous experience played an important part in his interaction with the computer. While having difficulties with using the mobile phone based on limited experience, he liked to work with pictures and change their settings in various ways when he worked with the computer (Näslund 2009, 74). Thus, he expressed that while interacting with mobile technology he felt he needed more practice, but when interacting with computers he felt more confident.

The experiences also became related to disability. For instance, the young participants' disabilities interacted with their ways of using and accessing ICT in the sense that they used, for instance, specific functions (the spelling function) in Word as a way for them to write correct Swedish (Näslund 2009, 79). All of the youths used software such as Word, Internet Explorer, and Windows media player. All of the youth participants had previous experiences of computers and as such no problems could be seen with the applications and programs. This was related to their interest in and experiences of technology generally. As mentioned previously, all of them also had experience of technology (computers, mobile phones) at home. Many of the educational programs that the adult participants used were not designed for adults with intellectual and perceptual disabilities (Gardelli and Johansson 2008, 25). They were designed for children, with pictures of children and with childish voices. Thus, a need exists for the programs to be developed and take into consideration the age of the users. The programs should be created with adult voices, have short clear instructions and simple adult symbols with clearly defined motifs and clean backgrounds.

The staff also contributed to the software that was used and enabled the students with possibilities to work with the computer. They supported the participants in their use of ICT by allowing them to dwell deeper into their own interest when interacting with the technology (Näslund 2009, 77). For instance, one of the youths had a special interest in subways. With teachers supporting him in his interest, drawing upon previous experiences, he started to send emails to people working with subways in the capital area and corresponded with them about his interest.

Five adults with disabilities participated in the project, during which they had the opportunity of learning to use computers (Gardelli and Johansson 2008). None of the adult participants had used a computer before the project started. They all had difficulties with communication and some of them behaved somewhat passively; they also often rejected interplay, and some of them often gave the impression of being insecure. During the study the adults, in cooperation with the staff, acquired tools for increasing their level of activity and communication by using ICT. Some of them, who often wanted to do the same things and were reluctant to try new activities, found a new interest by using a computer. The activity with the computer supported their ability to act and express themselves. Their understanding of images developed as well as the understanding of the use of images in general for communication purposes. In the interaction with ICT, the adult participants gained tools to communicate with, where they could express their thoughts and emotions through images. Through the use of digital images, the aim was to raise the awareness of the participants and to show emotions without destructive manifestations.

As the results show, drawing upon previous experiences and creating experiences are a way to support agency to come into life among people with disability. Similarly to Galis (2011), Moser (2003), Shakespeare (2006), and Söderström (2009, 2011), our study has shown that agency and disability come to life in everyday practices. The result shows that technology, individuals, and groups are part of the construction of the perceived social realities. ICT, disability, and agency are part of constant ongoing processes, reproduced by people who act on their interpretations and their knowledge of such processes in relation to technology. As mentioned previously, the result highlights the importance of drawing upon the users' experiences when using ICT. We recommend that using computers and supporting the participants to use it in a way that is part of their everyday lives will enable it to be used more frequently.

Agency and its relation to level of activity

The results additionally show that, besides drawing upon experiences when using technology, ICT enables changes in the level of activity to take place. There was hope in the project for the adults that their interaction with ICT would increase their degree of alertness and arouse their interest and willingness to be active (Gardelli and Johansson 2008). The sessions with ICT were used to try different methods to develop understanding of the relationship of cause and effect. Through computer use, the participants got the opportunity to improve their sensory-motor skills through the use of different methods that required precision. Furthermore, the use of the computer increased their motivation to try new techniques. By using ICT in the project, the adults also increased their self-esteem, belief in themselves, and their abilities.

While most of the youth participants used the computer on their own, all of the adult participants learned how to use the computer with the assistance of staff and all of them also developed their abilities during the duration of the project. They developed a goal-oriented use of the hands, with a control mode she/he was comfortable with. For example, Mikael's ability to take initiatives regarding activities, answering, and asking for help when not being able to solve a task improved. He started to take initiative, showed what he wanted to do, and showed what kind

of control mode he wanted to use. He began to use both hands in a more varied manner. Per, another of the adult participants, also increased his ability to take initiative, and improve self-confidence through at each session, choosing control mode, games, programs, and pictures. The awareness of his own ability was increased by being able to perform more tasks on his own, such as switching on the computer, printer, headphones, and inserting CDs as well as choosing the right symbol on the desktop. By using different control modes and gradually increasing the degree of difficulty from the touch screen to control mode, his functioning and the ability to control his arm with precision improved. When the participants gained control of their actions and revealed an increased understanding of the technology, the motivation and the urge to act increased. For example, Kalle, another of the adults, started to take initiative and make his own choices. Before the project, when Kalle was offered to try out new things and the staff asked if he wanted to do an activity, he often said: 'do not know, cannot, have never tried' (Gardelli and Johansson 2008, 18). During the project he became more secure and dared to give expression to his frustration. He developed a strong interest in exploring things and increased his desire to find strategies and solutions. His concentration, awareness and strength were noticeably increased. At the beginning of the sessions he had the strength to be active for about 15–20 minutes, but after the project he had the ability to be active for an hour or longer. The staff, who were familiar with each of the participants, considered that the result of the ICT project exceeded their expectations.

Our study shows that the participants' activity level increased in relation to ICT and social actors such as friends, family, and staff. Thus, people with intellectual disabilities experience the use of ICT in their everyday lives as part of relationships to other humans and to technology. Moreover, disability is also part of relations between humans and technology. In line with Gustavsson, Tøssebro, and Traustadóttir (2005), Moser (2003), and Shakespeare (2006), our study illustrates that disability is relational. Thus, when using ICT with the right tools, some of the participants' abilities were altered. While previously having limitations in communication abilities, ICT tools and relationships with the staff enabled changes in ways of expressing oneself. It is important to stress that all actors involved (the participants, ICT, and staff and other actors) are all mutually important for this to take place. Similar to an ANT approach, our study illustrates that agency gets its life in everyday lives, in encounters between bodies, technologies, and the wider society (cf. Galis 2011; Moser 2003). Similarly to Moser (2003), we argue that agency as well as disability is not something that is located solely in the human body. Thus, all the participants in our study were able to act in various ways due to them being part of human and non-human relations represented in various forms of practices.

The study illustrates that people with intellectual disabilities are able to influence their abilities by using ICT. They were using ICT to study, communicate, and have fun as well as for developing their inner capabilities. Thus when the participants used the computer they were able to see that they could predict what was going to happen and were also able to understand what was happening around them. They additionally showed that when using technology they had the necessary abilities to take care of communicating, searching for information, and thus things were manageable and within their control. Another aspect for the participants was that the computer encouraged them to believe that things in life are interesting and that using computers is worthwhile and that there is a good reason to care about what happens when using computers. These findings are in line with Antonovsky's

(1987) and Vygotsky's (1978) work concerning how the level of activity can change and that it is important to search for ways to develop one's abilities. Thus, we would like to stress the importance of using ICT as a way to take advantage of the various levels of activity.

Agency as networking and cooperation

Besides drawing upon previous experiences and using ICT as a way to develop levels of activity, networking and cooperation also played a vital part. The computers for the youngsters were related to having fun and as something with which to occupy oneself during spare time (Näslund 2009, 77). However, for some the computer was also used as a means for communicating, writing, and searching for available occupations on the Internet as well as searching for information about particular interests (Näslund 2009). So, in a way, the computer enabled them to network with the wider society.

The cooperation between the adult participants and staff in interaction with ICT were of central importance to the project, as was the sense of security the participants felt when they received help (Gardelli and Johansson 2008). Each session with ICT was built on communication and interaction with new technology, and this inspired and motivated the participants to act and use their abilities in meaningful way. Britta, one of the female adults, experienced an increased awareness of her abilities and started to make her own decisions regarding what kind of control mode she wanted to use, such as the touch screen, operator mode, and keyboard. A central factor for a positive development was that the participants could experience meaning and mutual trust through cooperation (cf. Gunnarsson 1990; Reilly 1974). In the cooperation between participants and staff it was also important for the staff to believe that the participants were capable, and to distribute that sense to her or him (cf. Brodin 1991; Merton 1968). Anna, another of the female adults, started to make her own decisions to talk about what she wanted to do and in what order (Gardelli and Johansson 2008). She increased her concentration and patience.

The attitudes and expectations of the social environment are important for people's development (cf. Rosenthal and Jacobson 1968). The results of our study show that it is important to explore the kind of expectations one has regarding people with disabilities. If one does not put demands or expect something from a person with or without disabilities it can lead to a self-fulfilled prophecy, and the person is thereby taught to become passive. The expectations regarding people with disabilities are often low. Sandvin et al. (1998) argue that it is vital that the social environment allows people with intellectual disabilities to try out alternative strategies to master their lives.

During the ICT sessions it was important that the staff could reflect over their ways of meeting the participants as well as the way they acted (e.g. to give the participants time to think and wait for a reply and not to do things for the participants that she/he herself/himself could perform). This could also depend on observation, providing attention, stimulation, motivation, encouragement, and guidance in the activity. In the interplay between Britta and the staff, her understanding of taking turns was developed and she could wait both for her turn and assistance (Gardelli and Johansson 2008). Her patience increased considerably; for instance, her ability to wait while the computer and programs started. She became more aware of what happened on the screen and improved her ability to coordinate her eye and hand

movements. As a way of capturing the interplay, video documentation became important. Each part of the filming was studied in the project group with an analysis and interpretation of changes in the abilities in order to support the participant at all times regarding the right level of development. The video documentation captured the staff's way of instructing and teaching, and could make them aware of different ways of acting. When watching the video documentation it became apparent to the staff that they sometimes were too quick to help, gave too much information or repeated an instruction rather than wait for a reply or an initiative from the participant.

The development of people with intellectual and multiple disabilities might imply that they can need several years of training to become independent in their use of ICT. It became apparent that the pedagogy and the ways of interaction used by the staff with the participants had a great influence on the latter's development and ways of acting. That the participants developed alternative ways of interacting with the ICT was most probably due to the fact that the staff supported and encouraged it. The results show that accessing and using the computer does not mean that one is sitting solely alone in front of the computer. Instead, by interacting with other people, staff, classmates, and other adults in the peer group, the use of computers becomes part of a community project. The importance of cooperation and networking is very vital to develop agency by the use of ICT.

Conclusion

ICT has meaning for the everyday lives of people with and without disabilities. In this paper we have opened up possibilities of talking about the relationship between ICT, agency, and disability from the perspective of interplay with youths and adults with disability. Moreover, we showed how technology and humans are part of relationships that influence access to, and use of, ICT, disability, and agency. The article shows how people of different ages with intellectual disabilities experience the use of ICT in their everyday lives. This study showed that ICT can make a contribution to the development of agency for people with intellectual disability. More specifically, it was shown by working with ICT tools and relating it to their own interests and previous experiences that the participants' agency was influenced. It was also shown how people with intellectual disabilities were able to influence their levels of activity, their agency, by using ICT, and the ways that this was done. Finally, our study has shown how agency among the participants was developed by support from others, through cooperation, and networking during ICT activities.

References

Adler, P.A., and P. Adler. 1994. Observational techniques. In *Handbook of qualitative research*, ed. N.K. Denzin and Y.S. Lincoln, 377–92. Thousand Oaks, CA: SAGE Publications.

Anderberg, P. 2007. Peer assistance for personal assistance: Analysis of online discussions about personal assistance from a Swedish web forum for disabled people. *Disability & Society* 22, no. 3: 251–65.

Anderberg, P., and B. Jönsson. 2005. Being there. *Disability & Society* 20, no. 7: 719–33.

Antonovsky, A. 1987. *Unraveling the mystery of health: How people manage stress and stay well*. San Francisco, CA: Jossey-Bass.

Brodin, J. 1991. *Att tolka barns signaler: Gravt utvecklingsstörda flerhandikappade barns lek och kommunikation* [To interpret childrens' signals: Play and communication in profoundly mentally and multiply disabled children]. PhD diss., Univ. Stockholm.
Brodin, J. 2010. Can ICT give children with disabilities equal opportunities in school? *Improving Schools* 13, no. 1: 99–112.
Brodin, J., and P. Lindstrand. 2003. *Perspektiv på IKT och lärande för barn, ungdomar och vuxna med funktionshinder* [Perspectives on ICT and learning for children, youths and adults with disabilities]. Lund: Studentlitteratur.
Codex. 2011. *CODEX – regler och riktlinjer för forskning. Humanistisk och samhällsvetenskaplig forskning* [CODEX – rules and guidelines for research. Humanities and Social Sciences]. http://www.codex.uu.se/forskninghumsam.shtml.
Flick, U. 2002. *An introduction to qualitative research*. 2nd ed. London: SAGE Publications.
Fontana, A., and J.H. Frey. 1994. Interviewing: The art of science. In *Handbook of qualitative research*, ed. N.K. Denzin and Y. Lincoln, 361–76. Thousand Oaks, CA: SAGE Publications.
Galis, V. 2011. Enacting disability: How can science and technology studies inform disability studies? *Disability & Society* 26, no. 7: 825–38.
Gardelli, Å. 2004. *'Det handlar om ett värdigt liv': Människor med funktionshinder införlivar IKT i sina vardagliga liv* ['It is about having a worthy life': People with disabilities use information and communication technology in their daily life]. PhD diss., Luleå University of Technology.
Gardelli, Å., and A. Johansson. 2008. *Datoranvändandets betydelse för vuxna personer med utvecklingsstörning* [The importance of using computers for adult people with intellectual disabilities]. Report FoU Norrbotten 2008:47. Luleå: Kommunförbundet Norrbotten.
Gunnarsson, S. Olof. 1990. *Kommunicera är nödvändigt* [To communicate is necessary]. Solna: Sipu.
Gustavsson, A., J. Tøssebro, and R. Traustadóttir. 2005. Introduction: Approaches and perspectives in Nordic disability research. In *Resistance, reflection and change: Nordic disability research*, ed. A. Gustavsson, J. Sandvin, R. Traustadóttir, and J. Tøssebro, 23–44. Lund: Studentlitteratur.
Hammersley, M., and P. Atkinson. 1995. *Ethnography: Principles in practice*. London: Routledge.
Harris, J. 2010. The use, role and application of advanced technology in the lives of disabled people in the UK. *Disability & Society* 25, no. 4: 427–39.
Kvale, S. 1997. *Den kvalitativa forskningsintervjun* [The qualitative research interview]. Lund: Studentlitteratur.
Law, J. 1992. Notes on the theory of the actor-network: Ordering, strategy and heterogeneity. *Systems Practice* 5, no. 4: 379–93.
Law, J. 1999. After ANT: Complexity, naming and topology. In *Actor network theory and after*, ed. J. Law and J. Hassard, 1–14. Oxford: Blackwell Publishers.
Lindstrand, P. 2002. ICT is the answer – but what is the question?: Parents of children with disabilities: Their thoughts, experiences, and expectations of information and communication technology (ICT). PhD diss., Stockholm Institute of Education.
Mason, J. 1996. *Qualitative researching*. London: SAGE Publications.
Merton, R.K. 1968. *Social theory and social structure*. New York: Free Press.
Miles, M.B., and A.M. Huberman. 1994. *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
Moser, I.B. 2003. Road traffic accidents: The ordering of subjects, bodies and disability. PhD diss., University of Oslo.
Näslund, R. 2009. Bringing actors together: ICT, disability and pupils in special school. Licentiate diss., Luleå University of Technology.
Oliver, M. 1996. *Understanding disability: From theory to practice*. New York: St Martin's Press.
Reilly, M. 1974. *Play as exploratory learning: Studies of curiosity behavior*. Beverly Hills: Sage Publications.
Renblad, K. 2003. Empowerment: A question about democracy and ethics in everyday life: ICT and empowering relationship as support for persons with intellectual disabilities. PhD diss., Stockholm Institute of Education.

Rosenthal, R., and L. Jacobson. 1968. *Pygmalion in the classroom: Teacher expectation and pupils' intellectual development*. New York: Holt, Rinehart and Winston.
Sandvin, J., M. Söder, W. Lichtwarck, and T. Magnusson. 1998. *Normaliseringsarbeid og ambivalens: Bofellesskap som omsorgsarena* [Normalization work and ambivalence: Communities as care arena]. Oslo: Universitetsforlaget.
Shakespeare, T. 2006. *Disability rights and wrongs*. London: Routledge.
Söderström, S. 2009. Ungdom, teknologi og funksjonshemming: En studie av IKTs betydning i dagliglivet til ungdommer som har en funksjonsnedsettelse [Young people, technology, and disability]. PhD diss., Norges teknisk-naturvitenskapelige universitet.
Söderström, S. 2011. Staying safe while on the move: Exploring differences in disabled and non-disabled young people's perceptions of the mobile phone's significance in daily life. *Young* 19, no. 1: 91–109.
Vehmas, S., K. Kristiansen, and T. Shakespeare. 2009. Introduction. In *Arguing about disability: Philosophical perspectives*, ed. K. Kristiansen, S. Vehmas, and T. Shakespeare, 1–11. New York: Routledge.
Vygotsky, L.S. 1978. *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard Univ. Press.
Watling, S. 2011. Digital exclusion: Coming out from behind closed doors. *Disability & Society* 4: 491–5.
Yin, R.K. 1994. *Case study research: Design and methods*. 2nd ed. Thousand Oaks, CA: SAGE Publications.