Creating a University for Everyone
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ABSTRACT
Even today, people with disabilities have limited access to education and higher education in particular. It is hard to compensate a mobile disability with even a brilliant brain agility because of the lack of physical accessibility as well as adapted accessibility at the universities.

This article reveals the background of our aims to creak a university for everyone, our experiences so far from the first pilot project and its swells and our plans for the near future. Logically, much more information on this project and its context could be found on the web [1].

Figure 1. Peter Anderberg studying at home.

BACKGROUND
CERTEC focuses upon the use of technology as a tool for capturing needs, wishes and dreams of the users [2]. In this project there are (at least) two users: the disabled student and the teacher. It is their experiences, their failures and fulfillment’s that are the result of the project. Not the technology per se.
We have used commercially available technology, ISDN etc., in the pilot project, but the knowledge we are trying to extract must be made as independent from the technology as possible. A technological device will, per definition, soon be replaced by something new and probably better. Hitting this moving target requires knowledge on another and deeper level than the momentary adjustment of a single artifact. Thus, our goal is not the resulting technological device, but instead the enhanced insight gained into the underlying needs, wishes and dreams.

In the pilot project we are trying to use two of the competencies of Peter Anderberg, - his competence to be disabled student as well as engineering student - to develop new mental models and extract the necessary knowledge about the possibilities and limitations of this way of distance studying.

TO ACTUALLY DO SOMETHING

There are a lot of people who think a lot about the future, and in particular the future in Information Technology, and how this will affect us all. This is good, the construction of mental models is necessary to structure your facts, thoughts and dreams. And this in its turn leads to the inner pictures that enables you to express your needs. But it only takes you that far. The need for these models to be confronted with reality is crucial.

There had been a lot of talk of how IT could help disabled people and even more about how IT will revolutionize the educational system. The visions are grand, but the concrete examples are hard to find.

This is where we started. With a student who had an interest in making his own education as good as possible and an interest in the technological equipment he was going to use, a few ideas of how to use it, and a firm belief that our mental models could only develop if they were confronted with reality. That a user in his attempt to achieve certain goals, could actually find the possible ways to go there.

We are not actually in this phase looking for normative results, and the technology itself is of minor importance, the important achievements lie both in the impact the very attempt to do something has had on the surroundings (i.e. media, government, university people, etc.), and in the questions raised (i.e. How must pedagogical methods change? )

Without actually using the system it would have been virtually impossible to determine or realize its potential.

COMPLEX SOCIAL ADDITION

In the complex arithmetic of social life sums do not always add up to what you could expect. The sum of cars, roads, parking-houses etc. becomes motorism, another way to live and to think. The car gave freedom to people, by actually widening their world. IT will lead to Itism. Itism and its information highways will make possible, amongst other things, a university for everyone, also for disabled people. Non-disabled people could manage even with old paths to knowledge. These paths were, however, closed to many disabled people.

We started out with a feeling that the lack of physical accessibility around the Universities was the main reason to this, but our work has led to a slight adjustment of focus as to why there is so few disabled students. The reason is just as much a lack of mental accessibility. You need to be able to study whenever you want to, whenever you dare, whenever you have the energy.

Time has shown itself to be a very important factor.
EMPOWERMENT
When providing disabled people with the proper tools, transference of power can take place. To give somebody the tools necessary to gain more power over his or her life and situation, should really be the goal for all technology aiming at disabled people. Because with power comes stature.

THE FIRST PILOT PROJECT PHASE
During the autumn 1995 a pilot project has been carried out with Peter Anderberg [3] doing his masters education in electrical engineering. When Peter started his education in 1985, he could still walk. After two years of studies the problem with his muscular disease increased. He moved back to his home town and interrupted his studies. After several years he has now accepted his disease and is motivated to continue his studies.

In a project financed by Ami (Swedish National Labour Market Administration), CERTEC utilizes information technology for distance studies. The equipment has been tested in lectures, in laboratory sessions and in the examination situation.

The Olivetti PCC (Personal Communication Computer) [4] uses an ordinary PC with an ISDN card [5], video camera and ISDN telephone, and a two line 64 kbit/s connection to convey picture, sound and data. This together with a full Internet connection constitutes the basis for the project.

For more comprehensive information about Peter and the equipment please look at web page http://www.certec.lth.se/useful/swedacc/distans_e.html.

Peter has two different possibilities to participate in the lectures. The lecture could be video taped or the student can participate using IT equipment. If the lecture was video taped he could choose, when he wished to participate in the lecture, i.e. learning on demand, regardless of time and space.

The PCC software has a lot of modules, for example Wintalk, Whiteboard and FileTransfer. They are important tools for laboratory experiments.

- **Wintalk** makes it possible to start a program on one computer at the university and in a window in the other computer the student can follow what is happening in the first computer as well as using his own keyboard for entering commands.
- **Whiteboard** gives the student and the teacher a common area where they can show documents, write and draw simultaneously, to clarify any difficulties.
- **FileTransfer** gives them the possibilities to exchange documents.

The examination (questions, tasks, answers) carried out in the same way as the laboratory experiment guidance. If the examination was oral, the face to face communication was used.

WHERE DO WE GO FROM HERE?
One of the most positive things about this project is all its side-effects and impacts. We have found a lot of friends in Europe, with whom we are trying to take things one step further and create university access on a European level. In Sweden we are looking at the possibilities of expanding the core project to comprise more students, and elaborate a whole course that all students (disabled or not) could attend to regardless of handicap and geographical situation entirely on distance.
REFERENCES
[5] Vision Technology, VC 8000 Hardware for AT compatible PC’s, British Telecommunications

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