ROLE OF THE TEACHERS AND STUDENTS IN ICT ERA

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Abstract— In the article, the focus is based upon the role of the teacher under the new regime of information- and communications technology in education. The use of this technology in academic education puts high demands on the technology due to the complex nature of the communication, and the authors maintain that the content and goals of the teaching and tutoring must decide the choice of technology. It must also be considered whether different technological methods should be used exclusively or combined with one another or with teaching or tutoring in the same room. The methods demand both pedagogical and didactical knowledge in order to ensure quality in the various areas where the technology is applied, and furthermore, a basic understanding of technical possibilities and limitations of the technology. This is essential in order to ensure that the whole spectrum of perception (senses) is activated when this is important in a dialogue. The paper presentation will be based upon reports from different projects, experience, field trips, discussions and reviews of literature concerning the use of video-conferencing, computer- and video-based learning. It is not possible to offer a complete picture of all the various media and methods in this portrayal, but we aim to provide some input about what we see as being important elements in this debate.

Index Terms— Information and communications technology, the role of the teacher, teaching by using technology, flexible learning

I. INTRODUCTION

In this presentation we will focus on the role of the teacher in the use of new methods in the field of Information and Communications Technology (ICT); we will look at what demands and expectations are put forward, and whether this role is changed by the use of these new methods. We will look at the teacher's role in connection with data-based learning and video-conferencing and will assess whether this is changed by the use of technical aids as opposed to more traditional teaching. Experience has shown that good methods for distance learning are also good methods for ordinary teaching. We think that this is mainly due to the fact that the distance learning student has achieved or assumed more responsibility for own learning and therefore glided into a more active student role. We neither wish to focus on distance education nor ordinary education, but rather look at the whole matter as one problem complex. We will talk about flexible learning and have wanted to focus on how the teacher can intervene in order to bring about a good learning process directed by the students. In a presentation like this it will not be possible to offer a comprehensive picture, but we have attempted to highlight some points we think important in the debate.

II. THE CHANGING ROLE OF THE TEACHER

The educational system is constantly being challenged to offer better education to more people, at the same time as technological development continually opens up new possibilities and methods of learning.

Education and tutoring can be described as complicated relationships in which many factors affect the whole. Some of these factors are the students' learning preconditions and which framework factors apply at any given time. By framework factors we mean: "given factors enhancing or preventing learning", and in this context associated with ICT. The framework factors will be different in relation to various methods. The students' preconditions for learning concern their working habits, attitudes, motivation and knowledge which are all central factors in teaching and learning. It is important that the teacher is conscious of this, and intervenes in the processes when it is desirable or natural to do so. Methods in the field of ICT often require different things of the teacher at the same time demanding more student activity.

As a professional practitioner, the teacher is likely to become a role model or standard for his or her students. The teacher should also be a subject developer. By this one means that the teacher should, through continual work, bring new knowledge to the subject through his/her own

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experience, and research and development work. The teacher's role as a subject disseminator is also emphasized by focusing on the "good teacher", who in an inspiring and lively manner, awakens the desire, and therefore also the motivation for learning. Some teachers feel threatened by new technology and experience - that this may make the teacher superfluous. The way we see it, however, technology will never be able to make the teacher redundant, but it may make the teacher's role different.

The teacher's daily plan is often full of countless challenges and the time constraints are very tight. However, it is expected that creativity should be given space at work in an active search for new knowledge and new methods. In this connection it is important that the teacher feels competent to move forward with the new tasks in hand. Motivation and competence are closely connected. Increased competence leads to increased motivation to develop what one is doing, and this in turn leads to one wanting to try something new. In this the interplay between teachers, teacher and student and between students becomes very important. Positive interplay and commitment increases the motivation and the learning effect.

In distance education, as in all types of teaching, teaching material is presented and a structure for dialogue between teacher and student is established. Here the teacher and students meet as part of the learning process. The students are fellow members and must to a larger degree than in traditional teaching, be made responsible for their own learning and faith in their own ability to master the learning situation. The teacher has a responsibility to help promote learning preconditions such as working habits, attitudes, knowledge and motivation.

Thinking through various teaching methods and assessing which possibilities they offer for learning is, in our opinion, not just important, but also challenging for the teacher. New technology is continually opening up new applications, and without the urge to try out new methods the teacher's work can seem monotonous, and the students can miss out on good and varied teaching set-ups. The importance of variation in teaching is often overlooked, although this is closely connected to the students' motivation and activity. The use of ICT must be carefully planned and put into a pedagogical framework. It must, in other words, have a subject context and never be slung about in a careless way. It requires the teacher to possess good pedagogical and didactical knowledge and be able to apply this in such a way as to promote learning processes.

III. THE TEACHER USING NEW TECHNOLOGY

Use of new technology in teaching and tutoring engages teachers but it also creates certain skepticism. From a teacher's point of view it may be quite tiring to get involved in new methods, not least of the technical sort. A feeling of not being able to master the technology or being competent to combine this with the subject matter can prevent the teacher from taking the step necessary to get started. A teacher who has enough getting through a normal day's work, with the challenges continually coming up, will feel an antipathy towards trying something new - at any rate something requiring one's own learning before being put into practice. Technical aids often become a victim of reluctance to learn. This is due to many different factors. Not least that technical aids have been so complicated that one more or less had to have technical know-how in order to use these aids, let alone understand them. The development in this field has, however, moved so fast that it is today possible to get access to equipment which is relatively easy to use. Previous experience has shown that good and precise planning is especially important when the use of technology is necessary or desirable in order to carry out a programme. Technology which does not function often leads to dissatisfaction and frustration and often becomes a barrier for further trials. When, on the other hand, it functions as it should, it becomes part of the learning experience and provides increased motivation for further research. Most teachers today use a computer as a natural instrument, and the barriers for moving this into the classroom, or indeed for moving the classroom out in the district area will be reduced. Financing can also prevent a minimum of equipment being procured, both for teaching, tutoring and the students' own work, whether it be individual or group work. Here one needs long-term planning and goal-related work. It will often, however, be possible to apply for special funding for such things and the development can quickly prove that it leads to savings and new sources of income.

IV. ELEMENTS OF THE TEACHER'S COMPETENCE BUILDING

One way to increase the teacher's motivation and ability to master is to arrange courses. The project in question here is based on just such a course in which we decided to actively use the equipment we were to learn about on the course. In this way we wished to give the teachers sufficient knowledge to be able to assess, choose, plan and carry out measures for competence development using information and communications technology.

From teacher-directed teaching to student-directed learning

Previously we have looked at the teacher's role and put forward some thoughts as to why we so easily get stuck in the traditional way of doing things. Today's society is complex. Demands and expectations for more education have become the basis for negotiations between employee and employer in the same way as wages negotiations. The future challenge in higher education is, as we see it, to focus on the learning process and what the teacher can do to enhance this. We have previously seen that an active student role promotes learning and we think that the student must take a great responsibility for his/her own learning. The teacher's task becomes more a question of making the right arrangements for learning, reflecting on things together and offering tutoring instead of purely concentrating on lectures. In this way the students get more of a sense of responsibility for their own learning and the teacher can use his/her subject, pedagogical and didactic expertise to enhance the students' learning process in a varied and inspiring manner.

The teacher makes the best arrangements for student-directed learning

In this connection we are going to take a look at data-based learning, which embraces all technical aids which can be associated with a computer and used to promote a learning process. The students can, either alone or in groups, be in a dialogue with the teaching material whenever they wish and in this way develop new knowledge. The teacher can adapt the teaching material and put in links to other bases when desirable. Data conferences can be set up in which students and teachers, with the use of a net reader, can be connected to a server and read a piece of work, put in documents or files, answer questions or put in new questions or comments.

If it is desirable to use a data conference as a method, one must use a leader or moderator. This will usually be the teacher's task. The students must be active in finding subject material or discussion arenas by connecting themselves up to the conference and finding input, extra material and video connections. The conferences may be open or closed. In closed conferences the teacher can follow the students' activities and intervene if necessary. By using such conferences, the communication will work out alright whether it be from one to many people and from many people to many.

In most conference systems one can also choose to send pieces of work as mail to individuals. One such piece of work to a communication can also occur with the help of electronic mail. The methods are usually combined using Internet and Intranet. Here the individual can distribute or seek information in the form of text, pictures or hyper links to other places on the same machine or to other machines. This means that the teacher can distribute instructions, documents, pictures, sketches, sound, video and much more on a machine. On a starting page one will be able to distribute instructions for a lecture with references to more subject literature, tasks, examples amongst other things. These references will then appear as underlined text which the user sends directly to the desired place by clicking on the text. The return message to the teacher can occur by a prepared link starting a mail system in which the teacher's address is already included.

This can again be combined with the use of CD-room and DVD. Software for such use can be built up in many different ways, ranging from the simplest way to the complex. Links can be established to other bases, in order to add to the subject material and offer new ways of looking at it. Such programs can be used in lectures, in groups or for individual learning for the student.

These methods can also be combined by using video-conferencing or two-way television. The videoconferencing technology can be used for lectures, conferences and tutoring amongst other things. It is suitable for connecting several groups together and presenting knowledge to people who otherwise would not have had access to this. One can ask oneself whether there is any difference between the classroom and the videoconference.

Teachers vary enormously. Some are lectures and swear to one-way communication, whether they are standing in a classroom, an auditorium or sitting in front of the camera during a videoconference. Others again are more the dialogue- type of people, preferring to have conversations, tutor and discuss. Videoconferencing works well in both these cases. Everything will ultimately depend on the teacher`s pedagogical expertise, technical competence and ability. Broadly speaking we can say that a teacher who functions well in the classroom, will also function in the videoconferencing room.

Even if a videoconference is, technically speaking, different, the pedagog`s ability to communicate will be the decisive factor. To create variation in videoconferencing

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studio classroom teaching it is fully possible to for example use:

- Several cameras
- Documental camera
- Projected picture on picture
- Screen picture downloaded from PC or Internet
- Video playback

By doing this the videoconferencing teacher acquires large possibilities to provide varied education. When the person in question knows what he/she is doing and prepares his/herself accordingly, new technology is a door opener to good quality teaching and can be just as valuable - or even better than in the classroom. In decentralized set-ups video-conferencing will along with data-based learning often make up the very lifeline of the whole set-up.

II. CONCLUSIONS

We think that tomorrow's students to a greater extent than today will pick "their college" through the Internet. They will orientate themselves about possibilities and limitations and find study models that suit their particular needs. Many are in a family situation, meaning they wish to be distance students, others may wish to be part of a lively student environment. Whatever the choice, we think that flexibility in the provision of education and methods will be a good thing for students.

It may be that one can connect a decentralized class up to a class at the academic institution. There may be a co-operation between different schools in order to get a bigger reservoir of expertise or other adapted teaching set-ups. With such methods it will be possible to meet society's requirements for a much better way of learning than we have been able to provide previously.

We also know that people learn in different ways. By combining the possibilities available today, one will be able to provide education which will reach more students and stimulate more of the senses, in order that learning can be a self-motivating process for the students.

The technology will never render the teacher superfluous, but it can change the teacher's role. By using ICT the teacher can arrange things so that the student, can, through active searching, find and go through relevant subject matter before coming to their classes or tutoring. In this way, technology can help time being better spent when teacher and student are together. It can also lead to having to travel less, by having video-conferencing meetings instead of ordinary meetings, and it can also be easier to adapt and tailor further education courses and studies which are in demand from the public and private sector

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