

The role of the student in the age of technology: Will the role change with use of Information- and communication technology in education?



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Abstract

This article is based on reports, experience, study visits, analysis of literature and sources and discussions concerning the use of information and communications technology (ICT) in learning, teaching and tutoring nursing students and students taking various advanced level courses in the welfare state's professions. It is a following up our article on "Videoconferencing technology in lectures and tutoring".

We have largely used video-conferencing technology in our projects, but other forms of information and communications technology such as the use of Internet, Intranet, CD-ROM and video are also mentioned based on experience, study visits, discussions and literature.

The above-mentioned methods require both pedagogical and didactic knowledge in order to assure quality in the various situations in which these technical aids are used. Furthermore this knowledge will lead to the technology being challenged, based on the subject matter's own assumptions and content, and will in addition provide an understanding of what possibilities and limitations are associated with the various methods. The subject's indigenous matter and the objective currently in use must decide the choice of and the way the technological methods are carried out.

Use of ICT in higher education puts big demands on the technology in order to attain the whole communications spectre in a dialogue. The large technological development during recent years has opened up new possibilities and methods for adapting learning and education in higher education. As a result of this new experience and knowledge can be developed, and this leads to better learning situations for students.

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.

Key words: computer-based learning and training, video-conferencing, flexible learning, distance learning and information and communications technology

Introduction

In this presentation we will focus on the student role when new methods of ICT are used, and see what demands and challenges are put and whether the student role is changed by the use of the new methods. The authors have for several years tried out various types of technical aids in teaching and tutoring. We have also contacted working environments which have worked with approximately the same type of technology, and thus been in contact with many people. We have also examined a variety of literature on the subject.

By focusing on the student role we would like to assess whether it is changed by the use of technical aids as opposed to more traditional teaching. We will also see whether these possible changes are positive or negative for the learning process.

We will start by looking at three different projects:

- *Tutoring students in education for the professions - approach and interaction by using two-way sound/picture medium*
- *In-service training in distance education and*
- *Elements of distance teaching in the education of nurses - development of pedagogical approaches*

Information and communications technology as a tool in flexible learning

The largest challenge we are confronted with in today's teaching system is, as we see it, to make clear the prerequisites for learning, and what helps achieve good learning processes. We see the future challenge in students taking over more responsibility for their own learning in a process in which the teacher functions more as tutor and resource person.

We will in this chapter look at video-conferencing, computer-based training and video and assess how

these can challenge the student role in a learning situation.

Video-conferencing

A video conference or two-way television, consists of two or more studios connected together in a network. Up to 4 studios can, through special connections, be on the screen at the same time. This is shown by the screen picture being divided into 4 with every studio/classroom appearing in their own square of the screen. If there are more than 4 studios/classrooms connected simultaneously this method cannot be used - in such cases the person talking will automatically appear on the screen as the sound steers the screen picture. The other people will then be off screen but hear and see what is going on.

Video-conferencing has been the main method in all the projects we have examined, so we reckon to have a fairly broad experience base in this field. The projects are continuously assessed and both written and oral evaluation methods are used. Video-conferencing as a method has been used in both teaching and tutoring and we will see what experience we have acquired associated to the student role.

Experience has shown that good and exact planning is very important in order to be able to succeed and that this preparation must also include the students. They are often unused to "being on screen" and can feel somewhat uncertain in relation to this. In addition everyone participating in the conference needs to know something about the technique and what possibilities and limitations are inherent in it. They also received information about the use of other aids such as PC, video and document camera. The motivation to try out video-conferencing was excellent.

Some people found it new and exciting and others saw it as a possibility to get the hang of a method they would probably meet in working life. The students mastered the technique very well. They quickly learned how to use the equipment and thought that they had a good dialogue with the teacher and fellow students in another studio both during tutoring and teaching. To achieve this it is, however, a requirement that the studios and/or the classrooms are furnished and organised to make this possible.

We told about how the students should be located and chose a camera angle which focused on the whole group at the same time instead of individual persons and avoided changing the camera angle too often. We also explained how colours and patterns on clothes and surroundings affect the picture quality. Similarly how movements and interruptions disturb both the sound and the picture. By this we meant to avoid too much "interference" in the picture and shyness about seeing oneself on the screen.

To begin with the students felt a bit self-conscious. It was difficult "not to interrupt other people" and to see themselves on the screen. Gradually as time went by everything went much better and they felt as if the technique more or less disappeared and the central elements of teaching and tutoring became more apparent. The students experienced that they prepared themselves better for teaching and tutoring when they were going on screen than they would have done otherwise. They also experienced tutoring to be more effective and concrete.

The students said that their teaching and tutoring needs were well covered. They felt that they got just as much out of it as in ordinary teaching and tutoring, but some thought that even though the teaching and tutoring was good, it should not replace ordinary classroom teaching and tutoring completely, but rather function in a combination.

Computer-based learning

By computer-based training we mean the use of E-mail, Internet, Intranet and CD-ROM part of a learning process.

More and more electronic journals exist and increasingly more educational and subject matter is available on the net. Moreover new teaching matter is continually being presented in the form of CD-ROM.

We have carried out lectures with elements of program software presented in CD-ROM and contributed to adapting for self-study related to the same medium. We have also had discussions with other people who have used these methods over a period of time.

As a student the accessibility of various courses will improve by using more electronic teaching aids. Self-study methods are suitable as distance education and are also independent of time and space. The student can access the teaching material when he/she wishes and study in his/her own tempo. The student must himself/herself be active in finding the teaching material and keeping the process going. It has often been regarded as favourable for the students to function in basis groups where they can exchange experience and inspire one another. The groups can be completely or partially teacher-directed should one wish to intervene in the process development of the group. By using interactive teaching aids the whole sensual apparatus is used in that the programmes are presented in the form of live film, stills, colours, animation, text in various forms as well as sound, speech and even music.

Experience has shown that this form of teaching and learning stimulates most people. Use of programmes on CD can be combined with subject matter on the Internet/Intranet in which changes can happen continuously on WWW, so that it will be easier to update and change. The student can then find lectures, literature references or other programmes available on Internet/Intranet for his/her own learning. One can thus ensure or at any rate expect that the student meets prepared for teaching or tutoring. If one puts necessary general information about a term or a practical course of study on one of the mentioned areas, the student can get acquainted with this on his/her own.

The information can be more advanced and better and also embrace areas which are otherwise poorly covered. The time with the teacher can rather be used for more in-depth questions and reflection at a higher level than would otherwise have been possible.

Students starting their placements in a municipality can obtain text, sound and visual material on the screen providing information about the municipality, for instance important buildings, information about and presentation of the various people they are going to work with amongst other things. In this way they will be able to meet well prepared and can use their time in the municipality better.

Use of video

It has been said there should be a certificate issued for using group work and video as methods of learning. It is all a question of how motivated the students are and what possibilities are available. Bu using group

work and video the students have to make a greater effort and be more motivated than with traditional teacher-led forms of teaching.

Students are used to seeing themselves on TV and video and associate this with entertainment and a passive receiver role. This must be broken down if one should succeed with this teaching form.

It may be that one wishes to see a film or play a role game in order to bring forth ethical dilemmas or interactive patterns in a communication process. The students are instructed about this in advance in order to be attentive to things they later want to use in a debate. If the role play is videotaped, it can be also be analysed and offer a more concrete basis for debate afterwards.

It may also be the case that lectures are taped and borrowed to those who could not be present. A teaching video can be made, specially adapted in order to learn a new subject area. The students can themselves practice the various procedures or activities or record this on video for later analysis. It is recommended that a group sits together when the video is put on. They can then stop the video from time to time, discuss what they have seen and in this way achieve learning in a more inspiring way. The teacher should therefore make the necessary arrangements in order assure best possible learning conditions by using his/her pedagogical and didactic knowledge and insight. In this way the teacher can also take part in directing processes along the way, but the students are themselves responsible for their own learning.

Information and communication technology's challenges in relation to the role of the student.

We have now looked at the areas we have concentrated ourselves on and will look at how they challenge the student role. Firstly we said that we saw the future challenge within higher education - a focus on learning. This means that the student must take a greater responsibility for his/her own learning and the teacher becomes more of a tutor than a lecturer. Today there is plenty of literature, and new electronic programmes are continually appearing on the market so that access to teaching material is adequate within most areas.

Our experience shows that active students learn more than passive students and we have tried to make the necessary arrangements so that increased student activity and taking responsibility for one's own learning process through the use of information and communications technology. Concerning this we would like to draw attention to Bjørgen who says that learning represents a piece of work to be done by the person learning. He maintains that learning occurs in a dialogue between "the learner" and "the learning task", not in a dialogue between a sender and a receiver. In such a learning process the book, the teacher, the group, TV, the telephone or telefax are purely teaching aids in a process.

If one looks at a video conference it requires this proximity to time, but not space. The method requires a certain preparation and activity from the student, but the student can, especially if he is in a large group withdraw and become a passive receiver. It will however be possible through this method to reach students located a long way from the place of learning, and give these the possibility of being able to take an education they would not otherwise have got. Moreover it shows that methods which are successful in distance learning are often just as successful at the place of learning.

With computer-based training one does not depend on time and space. The student must do something actively in relation to the computer and enter a dialogue with it in order to be able to work with the teaching material, send E-mails to co-operative partners or fetch things from the Internet, Intranet etc.

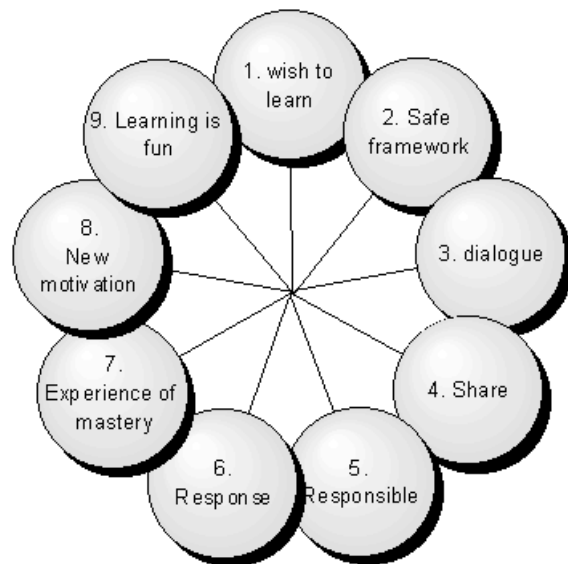
The student can in this way study when he/she wishes and where he/she wants to as long as the equipment is available and works. The method can also be combined with other methods such as video-conferencing or be part of a lecture. By using the method the student's whole sensual apparatus is activated - and this provides a better learning effect for most people.

Video can be used as outlined previously both in direct education and as student directed learning. It can also be independent of time and space. In the presentation of a lecture or "heavy" subject matter it is an advantage to break down the presentation into shorter periods challenging afterthought, discussion and reflection as well as comparison with subject matter from books.

Summing up

The educational system is continuously being challenged to provide better education to more people, as well as the big technological development offering new possibilities and methods for learning. Based on what we have described in this document, we think that attention must be directed at what promotes motivation for own learning and which factors help to make a good learning environment.

We have outlined in the following figure what we consider as basic elements of a good learning process:



1. **The wish to learn**
In the wish to learn lies the motivation. The student will often look for possibilities to acquire more knowledge.
2. **A safe framework and study progression leading to desired goal**
When the student is admitted to a course of study, the place of study has a duty to make the necessary arrangements so that the student can reach the goals set. This can be teaching at the place of study or education which is decentralised. Experience shows that students experiencing unpredictability and uncertainty in their study situation, because the planning work has been too poor, often lose their motivation.
3. **The possibility of entering a dialogue with the teaching material**
The use of information and communications technology opens up new possibilities for learning. Besides the student relating to normal literature, the teaching, learning and in-depth communication is presented by video-conferencing, internet/intranet, CD-room and video.
4. **The possibility to share new insight and understanding with other people**
A human being is basically a social individual, and often functions best in interaction with other people. The possibility to share new insight and understanding with other people leads to better self-insight. Things existing in the unconscious become apparent to a larger degree when one puts them into words and in this way increases one's own learning.
5. **The experience of being responsible for one's own learning**
The student who experiences being responsible for his/her own learning will focus more on him/herself and his/her own learning process than the student who has not had this experience. Through this the student often becomes a more active searcher and more easily accepts the challenge than the student who just sees him/herself as part of a mass. Use of information and communications technology puts considerably greater demands on the student than ordinary teaching as regards independence in the learning process.
6. **Response from other people, fellow students/teacher**
A human being needs response from other people in order to keep on developing. In a learning situation this does not necessarily need to come from the teacher. If one achieves good study groups, the students will back one another up and learn from one another. If one wishes to instigate certain processes in the groups, the teacher can intervene with thoughts concerning this.
7. **Own experience of mastery**
When the student experiences mastery, this acknowledges one's ability to acquire the subject material one is studying. Moreover, it gives one personal pleasure which then again provides motivation for new learning. Mastery also has an effect on the development of personality and strengthens the self-image. When the student experiences mastery in the use of new technology, he/she will experience balance between his/her various possibilities for action and also ability to get things done.
8. **New motivation**
All the points we have mentioned previously lead, if they work as intended, to new motivation. It is, however, important for the teacher to use pedagogical and didactical knowledge during the whole course of study by showing insight and understanding and making arrangements for a good learning process. This means positive working together, the safe exchange of knowledge, good framework factors and varied methods.
9. **Learning is fun**
A successful learning process is self-motivating and leads to the student continually searching for new subject matter and new possibilities.

The circle will then start again as long as the student wishes it, and one has developed a process for leading the student to his/her desired objective at the same time as enriching the student - both personally and socially.

Conclusion

We have in this document focused on the student role and the desired learning process and have wished to find out whether the student role is changed by the use of new technological methods. We have described the learning process, but really must admit that this does not necessarily mean a straightforward association with the use of new methods. We have seen that pedagogy and didactics suitable for distance learning are also eminently suited to ordinary teaching. This should, however, provide inspiration for trying out new methods in different educational set-ups.

We have in this presentation tried to point to expectations to the student role in relation to the introduction of new technological methods in higher education.

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