THE COLORS OF AN ONLINE LEARNING SOCIETY: EXPERIENCES FROM MULTI-DISCIPLINED ONLINE TEACHING PRACTICES

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Abstract *¾ One of debatable issues for implementing online learning is the issue of accessibility for online learners. Skeptic views consider online learning as a laboratory infant and they believe online learning is only accessible for young and IT experienced learners, thus, a narrow group of online learners. A research study has surveyed 17 online courses, conducted by Østfold University College since 1998. The study summary demonstrates the fact that online learning is accessible and applicable for a broad range of learners, though they all have their own different ages, IT knowledge, education backgrounds, disciplines of professions and located in different geographical regions. The survey indicates the fact that online learning is rather a colorful communication society where many of our prospective learners are adapting online learning as their new ways of learning and knowledge seeking. The study illustrates the large variety for implementation of online learning in different school disciplines, majors and teaching courses.*

Index Terms ¾ E-University, online learning, courseware, teaching practices.

INTRODUCTION

When talking about online learning we are very often asked to describe the typical online learner and online course. This question very often is based on a prediction that the answer will be the young and IT experienced learners and the IT related courses. But is it that simple and orderly?

The aim of this paper is to present a study of the online learner; *Who is she, how does she work and what are her experiences and thoughts about online learning*. We will try to answer these questions based on surveys from several different online courses run from Østfold University College (HiØ) the last four years.

We will begin by defining some of the concepts used in paper.

Second we will look at why online learning is so important in higher education. We will do this by looking at three categories: How the students in higher education has changed these last years, how the new economy has changed the job market and the need for lifelong learning, and the changes within higher education institutions.

Third we will describe five different online courses/scenarios run from HiØ and compare the content, delivery methods, learning activities, student characteristics and surveys.

Last we will summarize our findings and experiences and look at the online learner, online courses, teaching and learning methods used.

WHAT DO WE MEAN BY ONLINE LEARNING?

It has proven difficult to speak about online learning in all its colors and flavors with a high degree of accuracy. There are a lot of concepts describing different methods, different types of delivery and different approaches.

> *Web based learning, online learning, distance learning, continuous learning, lifelong learning, distributed learning, computer based training, flexible learning, e-learning, computer assisted learning, net based learning, ...*

Confused? You should be; the concepts are many and they are often not very well defined. We will create some work definitions that we will use consistent thru all the paper. These concepts may be used different in other contexts.

We will try to use five concepts; Computer based training, Web based learning, Distributed learning, online learning and flexible learning.

By *Computer based training* we mean training supported by a software based environment. Often used for training simple skills. Typically "show and tell" and without any interaction except that with the software.

By *Web based learning* we mean learning supported by web pages serving lecture notes, course schedule, assignments and other resources. Communication between student – teacher or teams of students don't play any important role in the teaching methods used. Low cost environment for learning.

By *Distributed learning* we mean an environment similar to that for the *Web based learning* but including learning team centered activities and facilitated by an expert/instructor. Here the communication and interaction between the participants are the most important part used in the teaching and learning methods. High cost environment for learning.

By *Online learning* we introduce a wider concept covering both *Web based learning* and *Distributed learning*. Often there are no clear boundaries between the two, and *Online learning* is a useful concept to describe these courses in general.

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By *Flexible learning* we mean learning supported by both *Online learning* and on-campus/local sessions. Classroom activities plays an important role alongside online activities. High cost environment for learning.

WHY IS ONLINE LEARNING IMPORTANT IN HIGHER EDUCATION?

Online learning is part of every university and colleges strategic plans. There have been used a lot of resources and efforts to plan and implement these activities. But why is online learning important in higher education? We will try to answer this by looking at three different categories, all emphasizing the importance for changes in teaching and learning methods: the new student, the new economy and the changes within higher education.

The new student

We see a change in who the students taking courses in higher education are. We can not take for granted the uniformity in age, background and knowledge as before.

The number of students working off-campus is increasing. Partly because of an increasing number of part time students, distance students and continuous learning students. These new student groups differ from the ordinary on-campus student group. They are in part time or full time jobs, they have family and/or live in regions away from the university.

> *"There are more than 1 million participants in adult education each year. Training takes place in the public educational system, adult education associations, folk high schools, distance education institutions and other private institutions and in the workplace."* [1]

The trend in higher education is more heterogeneous student groups, including off-campus students. These students demand different learning and teaching methods and learning environment. Anywhere and anytime learning as in online learning are essential for these students.

Also among the on-campus students we can see demand for more flexible learning environments. The mandatory lectures in a lecture hall are not enough. There should be available other means for taking parts of the courses; on-line lecture notes, taped lectures and seminars available thru streaming video, on-line team work, seminars, assignments and portfolios. *Flexibility* is a key word for these students.

The *shopping* student is also reality; students taking courses at different universities collecting credits and degrees. These students can be from within the country or region or *international*. We encourage this with grants, formal exchange agreements with other universities and as part of the course schedule and syllabus.

The new economy

The new economy or more precise the globalization of the economy and the way new technology changes the way we live, work and do business influence every part of the society.

We can today see radical changes in the working careers for individuals. The number of people staying in one career is decreasing. On may 2 2001 Aftenposten (a national newspaper in Norway) reported that 35% between 25 and 44 years was estimated to change career during 2001[2].

The "lifetime" for knowledge and skills is also decreasing. We have to continuous update and learn new skills and aquire new knowledge to be able to stay in front.

> *"Estimates have suggested that we are entering a period when training that workers receive will become obsolete within three to five years"* [3]

The figures suggested above may not be all valid in higher education, but they sketch a trend important also for us.

The above changes in the work and career and continuous need for new skills and knowledge suggests changes in the learning and teaching methods available. There is a demand for continuous and lifelong learning available anywhere and anytime for people already in a career, or on the way from one career to another.

New learning and teaching methods in higher education

The last decade has been a continuous reorganizing in higher education institutions as well as in many other branches.

For the staff and teachers these changes are most visible in the falling level of real resource per student.

> "*A declining unit of teaching resource has put the spotlight on teaching methods because teaching staff costs are a high proportion of total costs within universities*" [4]

Another important change is the increased focus on learning quality, flexible learning environments, new learning activities and new methods of evaluation. At HiØ we see this in web based course pages supporting the on-campus learning activities. The services provided increases each semester and some courses today offer an environment for flexible learning. There have also been an increased focus on project based team centered learning in mathematics and natural sciences and the change from traditional written exams towards portfolio and continuous assessment.

Summary

Several forces drive the demand for flexible, anywhere and anytime solutions in higher education. We have the new students attending courses in higher education, the new order

and demands laid by the new economy and last the changes within higher education. All forces drive towards more flexible, accessible, learning team centered and documented solutions. Today online learning seems to be the most (only?) cost effective and promising way to do this.

A CLOSER LOOK AT FIVE ONLINE LEARNING SCENARIOS

This paper is in large based on experiences and surveys from five different courses conducted from 1998 to 2002. The courses are chosen to represent the different departments and different types of courses available at HiØ today; distance learning courses and on-campus courses.

Some statistics on HiØ's online learning activities as they are run from Nettsenteret[5] at department of engineering and natural sciences are shown in Table I. This online learning hub is responsible for the online learning infrastructure; IBM/Lotus LearningSpace[6] courseware, MOO/Encore[7] synchronous courseware, Quicktime[8] video streaming facilities and support to new course developers.

TABLE I
NETTSENTER ONLINE COURSE STATISTICS

Description	Number
Students participating in online courses	912
Courses run from Nettsenteret	26
Available courses autumn 2002	42
Different departments using Nettsenteret	4

The five online courses are:

- Elementary Physics (Gunnar Andersson)
- German Language intermediate study (Frode Lundemo)
- Online Teaching and Learning (Hong Wu)
- Construction Management (Tor Langvik-Hansen)
- Student nurses work practise (Mariann Fossum)

Next we will describe each course in more detail along with experiences and results from online surveys.

Elementary Physics

Elementary Physics was created and developed with support from the Armed forces adult education department (VO). It is equivalent to the on-campus course run at HiØ, only adapted to distance learning students. This course or equivalent is compulsory for all students starting their engineering education. A lot of pupils graduating from upper secondary school lack this course.

Elementary Physics is part of a concept called Engineering education in the armed forces (IPIF) that offers all personnel in the armed forces the opportunity to prepare or start their education while still in service. One important criteria was the quality in the offered courses; the courses offered was not be self-tuition but real education, with real teachers and students. We did this by focusing on distributed learning.

TABLE II
FACTS AND FIGURES ON ELEMENTARY PHYSICS

Description	Value
Name	Elementary Physics
Department	Engineering and natural sciences
Main participant group	Personnel in the armed forces planning to start their engineering education
Type	Off-campus
ECTS Credits given	0
Duration	1 year
Main technology	LearningSpace (asynchronous)
URL	http://nettkurs.hiof.no/no/lspace/fysikk-del1/schedule.nsf
Number of students	25
On-campus sessions	3

Basic learning activities were lecture notes, laboratory work simulations, assignments, team work, guidance and student portfolios. These activities were supplemented with on-campus sessions and laboratory work, online synchronous seminars, lectures and workshops based on MOO/encore and streaming of taped lectures and seminars.

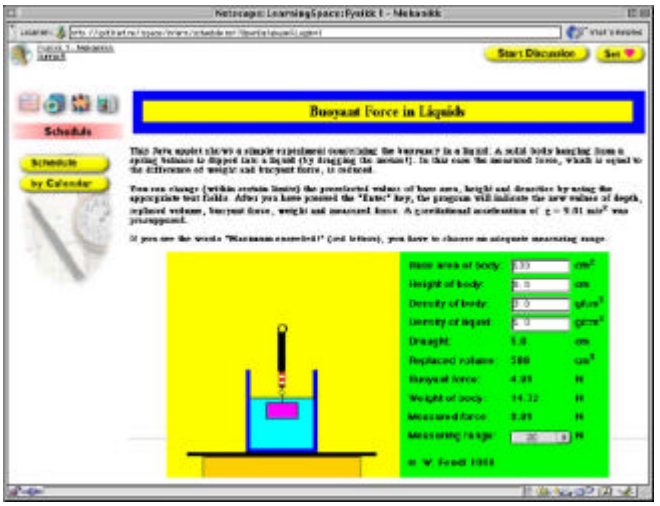

FIGURE. 1
SCREENSHOT SHOWING JAVA APPLET SIMULATION

In this course we emphasized the importance of variation in assessed activities and work. In detail we assessed assignments, laboratory work and journals, tests and examinations and online and on-campus workshops and seminars. All assessment was ongoing documentet and filed in the student portefolio for the student to see.

There were also continuous evaluation and surveys with feedback from the students; monthly log (on-line), quarterly surveys (on-line), plenary discussions (online and during on-campus sessions) and a final survey at the end of the course. Postive findings were "on-campus sessions", "my own work schedule", "good organisaton and work schedule" and "help from the teachers". Negative findings were "too little time on task" and "passive students in team work". Changes suggested were "more time on on-campus sessions" and "better cooperation with local military division".

Other experiences were very good results on the final exams compared to the ordinary on-campus students, but also a large number of defections.

German Language intermediate study

German Language intermediate study is a joint project between Bergen and Oslo Universities and Stavanger and Østfold University Colleges.

TABLE III
FACTS AND FIGURES ON GERMAN LANGUAGE

Description	Value
Name	German Language intermediate study
Department	Social studies and languages
Main participant group	Teachers in upper Secondary education with 60 credits German language
Type	Off-campus
ECTS Credits given	30
Duration	1 year
Main technology	MOO/Encore (synchronous)
URL	http://cmc.hf.uib.no/tysk/mellomfag
Number of students	25
On-campus sessions	4

This course differs from the other in the way that it is not served from HiØ. It is also based on MOO/Encore and is synchronous with 6 hours online lectures scheduled every week.

The online learning environment uses the virtual village (Dreistadt), with houses, a university, bier-stube e.g. to create a context for meaningful and engaging learning.

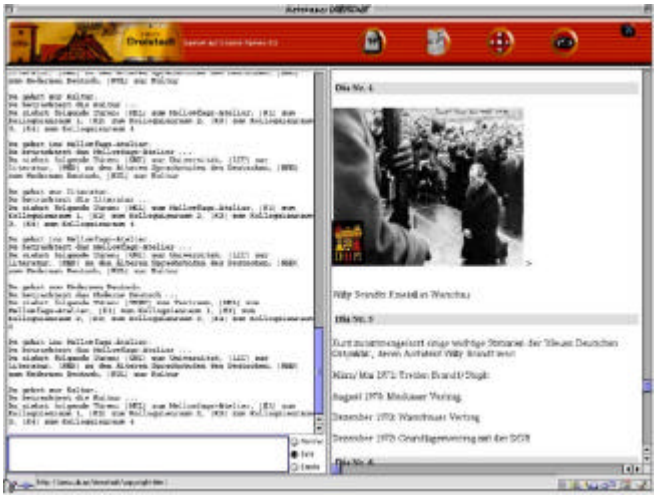

FIGURE. 2
SCREENSHOT SHOWING A LECTURE IN DREISTADT

From the students surveys these quations are representative: “Introduction to Dreistadt and support has worked fine” but “Synchronous learning and teaching not always effective”. Changes suggested were “More information before start wanted” and “More on-campus sessions”.

Other experiences were problems with limited resources and time in developing and teaching the course. There were also discussions about the ease of use in the Dreistadt enviromment. The collaboration between the higher education institutions worked without problems.

Online Teaching and Learning – introduction and practices (OTIP)

These experiences are based on two different sessions; one for the university staff at The Icelandic college of engineering and technology and one for the university staff at Shijiazhuang University of Economics in China.

OTIP is based on a similar course taught several times in Norwegian for staff at our university college and partners. The idea is to learn about online learning and teaching by online learning and teaching.

TABLE IV
FACTS AND FIGURES ON OTIP

Description	Value
Name	Online Teaching and Learning – introduction and practices
Department	Engineering and natural sciences
Main participant group	University staff international
Type	Off-campus
ECTS Credits given	0-6
Duration	1-3 weeks
Main technology	LearningSpace (asynchronous)
URL	http://nettkurs.hiof.no/lspace/otip/schedule.nsf
Number of students	37
On-campus sessions	0

Note that this course was run twice; once for the Chinese university and once for the Icelandic college. The framework for the course and academic traditions differs a lot in the two sessions.

It was discussed installing a mirror server for our Chinese students located at the local university. This plan was unfortunate not carried out.

There were local adaptations in language, guidance, course duration and content.

These sessions were surveyed online twice; one survey to understand the students expectations the first day of the course and one evaluation of the course at the end. Postive findings were ”We can learn computer's knowledge”, “Learn English” and “how to use internet in the teaching”. Negative findings were “Waste of time because the Internet transfer rate is slow”.

Other experiences were bandwidth problems between our server in Norway and our students in China. We also had an unfortunate focus on software and not content in the Icelandic session. As always was time a critical factor and without management support are these type of activities very difficult to implement successfully. We learned a lot in these two sessions; the learning methods and ways of communicating and study were very different and very interesting to watch.

Construction Management

After completed course the students should have a general view of the most important production methods, machines and equipment used in construction management. Within the area of calculation the students should be able to calculate rough estimates and simple tenders. The students also should have insight into contractual relations between builder and contractor.

TABLE V
FACTS AND FIGURES ON CONSTRUCTION MANAGEMENT

Description	Value
Name	Construction Management
Department	Engineering and natural sciences
Main participant group	On-campus students
Type	On-campus and compulsory
ECTS Credits given	9
Duration	1/2 year
Main technology	LearningSpace (asynchronous)
URL	http://nettkurs.hiof.no/no/lspace/irb35000/schedule.nsf
Number of students	40
On-campus sessions	Ordinary scheduled lectures and workshops

The online course was developed with these objectives:

- To be a supplement to the ordinary lectures and workshops and increase the quality of services offered our on-campus students
- To be an optional course for distance students located at university colleges without this course in their course portfolio
- To be an alternative for employees in construction management making it possible to study anywhere and anytime while in production

Construction Management was funded and supported by The Norwegian Agency for Flexible Learning in Higher Education (SOFF)[9]. One of the original intended participant group was student taking the course while in production at different construction management companies. Problems getting enough students from this group changed in some degree the teaching methods used. We plan to deliver the course for the this group in the autumn 2002 or spring 2003.

Student nurses work practise 1.7

This course includes work practice at local nursing homes and care housings for disabled people. Student nurses work practise 1.7 is compulsory for students in their first year of nurse training at HiØ.

TABLE VI
FACTS AND FIGURES ON STUDENT NURSES WORK PRACTISE 1.7

Description	Value
Name	Student nurses work practise
Department	Health Care
Main participant group	On-campus students
Type	On-campus and compulsory
ECTS Credits given	5
Duration	3 weeks
Main technology	LearningSpace (asynchronous)
URL	http://nettkurs.hiof.no/no/lspace/irb35000/schedule.nsf
Number of students	140
On-campus sessions	

One of the main reasons for developing this course was the wish to utilize the resources more effective. A lot of time was spent traveling from the different locations visiting students. Using online environments for guidance and communication could increase time on task for both students and teacher and increase the effectiveness.

This course uses a combination of work practice guidance in an online learning environment and on-campus seminars and lectures. There are compulsory discussions, guidance and assignments in the virtual classroom.

Students are organized in basic groups of about two or three working together on cases and assignments. There are also large variations in age and computer skills among the students.

The Student nurses work practise course also makes intensive use of computer based training software for teaching basic skills and procedures.

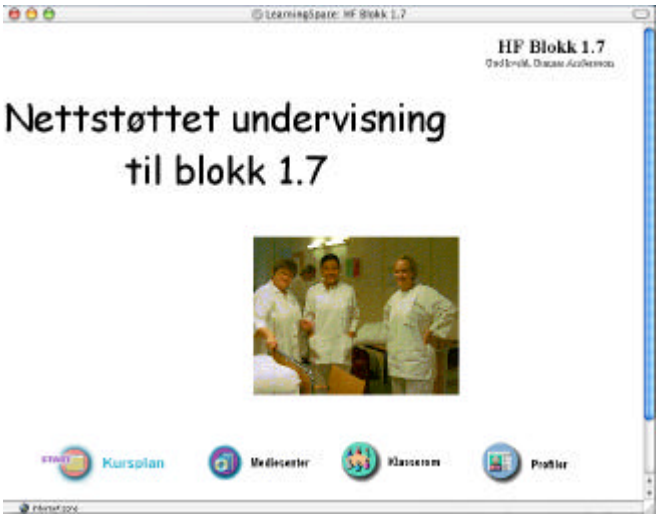

FIGURE. 3
SCREENSHOT SHOWING THE WELCOME PAGE

This cours was surveyed online twice; one survey to understand the students expectations the first day of the course and one evaluation of the course at the end. Comments and discussions on the progress of the course was encouraged. Postive findings were ” Learned a lot – want the

project to continue for the nest work practice". Negative findings were "Time schedule too tight" and "I don't see the point/benefits in using an online environment when on-campus". Changes suggested were "increase course to 4 weeks" and "More time on training basic computer skills".

Other experiences were technical challenges using LearningSpace with 140 students and 20 instructors. There was also an increased workload for the teachers involved. Initially there were problems with passwords and username for the students preventing some students from communicating with the others in the online learning environment.

SUMMARY

Then who, based on our experiences and surveys, is the online learner?

> *Who is she, how does she work and what are her experiences and thoughts about online learning*?

She (or he) is from 18 to 62 years old, from Sarpsborg, Stavanger, Kirkenes, Reykjavik (Iceland) or Shijiazhuang (China). She is attending courses with duration from 2 weeks to 1 year and in subjects from mathematics to student nurses work practice, in course level from upper secondary school level to adult education designed for university professors!

Our study demonstrates the fact that online learning is accessible and applicable for a broad range of learners, though they all have their own different ages, IT knowledge, education backgrounds, disciplines of professions and located in different geographical regions. It also indicates the fact that online learning is rather a colorful communication society where many of our prospective learners are adapting online learning as their new ways of learning and knowledge seeking. The study illustrates the large variety for implementation of online learning in different school disciplines, majors and teaching courses.

There are several challenges in our continuous work on online learning. From our point of view the three most important are:

- To keep the focus and resources on content – not technology
- Variation and diversity in teaching and learning activities and methods with basis in the distinctive character in each course
- Time and resources to develop and facilitate effective learning environments adapted to a broad range of learners

FIGURE. 4
FUZZ ABOUT COMPUTERS[10]

ACKNOWLEDGEMENT

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