AVOCAAD

A First Step Towards Distance Learning?

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In the industrial world knowledge is developed very fast. As most countries are depending on employees with a high level of knowledge and skills the term "Life Long Learning" has been formulated and the concept is more and more accepted. Institutions of higher education are more and more involved in creating supplementary education more independent of time and place. Distance learning was originally carried out by ordinary mail, which was slow but might then have been the only solution for people in remote places. With the Internet and e-mail the distance-learning concept has got a far better tool, for instance better interaction facilities. Architects and engineers in practise are deeply involved in solving the problems of the present projects. Education which is independent of time and place must be of great interest to both parties. The AVOCAAD project has created an education model for students to meet the possibilities of CAAD. The education model can be used in a curriculum at a school as well as for distance learning. Among the possible experiences from it, the one concerning distance learning might be the most important future application of the system in architectural education.
This paper sketches the pedagogical background and gives examples from other areas of knowledge, where distance learning is already in use. We will put the question how the AVOCAAD concept meets the experiences from distance learning.
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Background

In a vastly populated country like Sweden where potential students are spread over a large surface it was natural to make use of traditional mail service for teaching - the Correspondence course. The media was the letter and the pace was due to the effectiveness of the National Post.

Specific channels in Radio and Television are used for public education for example such as languages and society related knowledge. If you consider them all there is a wide spectrum of medial possibilities to distribute knowledge.

The Internet and the Web-technique produces a channel for distribution and communication. In practice the use of Internet for distance learning is no big difference to education by correspondence but it offers many new advantages, which might appeal to other groups than people in distant places.

The AVOCAAD project makes exercises available on the Internet. The first version consisted of exercises from the ordinary curriculum of the participating universities. A form for the descriptions was created. For the evaluation students can submit their work and then study what other students have done with the same exercise.

AVOCAAD – A distance learning oncept?

In AVOCAAD the pedagogical aspect is central. We will check it against actual pedagogical models. As AVOCAAD is aimed for usage on distance it is interesting to learn from the ongoing development of distance learning in other areas.

We have found three actual web sites from which we have selected what we find are the actual issues and mirror it in the AVOCAAD framework.

Pedagogical methods in architectural education

Delivering a lecture on a theme and running exercises with the students is maybe the most common pedagogical method in architectural education. It has many advantages and is mostly enjoyed by the students, which usually is significant for an effective learning environment.

In architecture the traditional ”studio” teacher is the ”Master” with a mostly rather firm control of what is going on and what the results should be like. This requires a close contact between teacher and student and we imagine that most architects have this as a model imagination of a successful education situation.

Donald Schön introduces ”Reflection in action” as an important activity in education of professionals. As he refers to examples from architectural education it is well worth consideration. Schön notices that the teacher and the student make reflections on the project he refers to. If the exercise is big enough a session of critics is held with the individual proposals and this gives at least an occasion for reflection and it is up to the actors to use it.

After education architects get more self-going although some chief architects still like to frequently control their staff and what they are creating. As the potential students have finished their studies their expectations are important.

Pedagogical research propose new models

Pedagogical research in other areas of education has resulted in another view of the roles of the teacher and the students being the most fundamental. The focus has been moved from the teacher as the central actor to the students. Learning is the activity. Teaching is there to support. The famous pedagog Maria Montesori formulates the students wish - ”Help me to do it myself” - which is opposing a close and dominant teacher contact.

The teacher’s role is more like that of the coach of an athlete, stimulating, advising and willing to do almost everything but the task of his client. One of the very crucial roles of the coach is to encourage the athlete when things go wrong, the lust is null and surrender seems the logical solution. This is probably the most difficult situation to discover and prevent on a distance.

The ”Problem based learning” concept is the most fashionable pedagogical model of today. Searching for knowledge when it is needed and applying it on a case is what many exercises in architectural education is aiming at.

Examples of Distance learning in other fields

A search on the net with an Internet browser on ”distansutbildning” in Swedish gives some 8.000 hits! To survey this is not possible in the time set for writing a conference paper. So we study a few cases and try to find out what is stressed as the key issues.

”Distans Konsortiet” (http:// www2.distanskonsortiet.org)

”Distans Konsortiet”, which is formed by the Swedish Universities of Lund, Linköping, Uppsala, Umeå and Växjö, offers university courses on distance over the Internet. At the web site, there is even information in English. It tells that the organisation was formed in 1993 and so far has educated some 7000 students and 250 teachers have participated.

There are also links to two significant reports, which is the summary of the experiences so far.

The Technique and media report stresses the role of the media to cover the ”double distance” between teacher and student. It means to make things easily understandable with computer interaction, animations, films, sound, etc. and the media itself for communication such as desk-top video, video conference, e-mail, chat groups etc.

The Students manual stresses the demand on strict rules and definitions in a communication process where it is difficult to straighten out misunderstandings as they occur. The manual is to be used by the students and by the teachers as well. It stresses that the manual should cover the pedagogical idea, the form of the manual and the instructions. It should be well authored and easy to understand. A good manual can as well be used in the traditional ”classroom courses”.

”52 conclusions and ideas” (http://www.klinvet.hs.sll.se/ad/p127Doc/SDCore.html)

This is a result of a national Swedish research project with a distance class course. It is presented as a list with 52 titles. Each title lists some of the questions from the questionnaire in a survey, the percentage of the answers and some conclusions.

More than 90% of the students choose this distance learning course because of time independence, you can stay in your home keeping normal social contacts, combining studies with work and no travelling. It was also thought of to be less expensive for the student as well as the employer.

A key issue in the pedagogical discussion of distance learning is how to arrange the Human contacts. Most courses are therefore not strictly on distance. They should be something in between in the meaning that they are started and finished by traditional class meetings at the arranging institution.

To support the motivation of the student on distance is difficult. The course has to be interesting and enjoyable. The problems with computer errors are working in the opposite direction and support is an important factor in keeping motivation. Interaction between students and teacher are found more important than you might think of. There are for instance a load of questions, rational and not, rising in the mind of the student, and they have to be answered not to spoil motivation.

Virus has become a plague in distance learning when you use the most common software for word-processing and e-mail. A ”look out system” within a course is a good investment. Steering documentation is stressed.

LUVIT-centre (http://www.luvit.com/)

LUVIT -centre is a web site for Distance Learning associated with Lund University. The University runs courses on how to use the web site and LUVIT has outspoken pedagogical ambitions on high technical quality and interactive learning material.

In marketing the term ”E-learning” is used and in the introduction it is defined: -”E-learning is the future - a flexible and interactive way of enhancing learning and transfer knowledge online! It offers effective high-tech learning methods and the human touch necessary to make learners comfortable with new technologies. No matter if you use it as a separate management of training or as a complement to traditional classroom training - e-learning will give you a number of great benefits.

Interactivity is one solution to the communication and human contacts problems and the ”introduction course for students and teachers” uses this feature professionally. One form of interactivity is ”test” a kind of computer-supported questionnaire for the student to use to find out if she understood a material.

The use of many channels for communication is stressed and the teacher is present through digital media such as video, e-mail and chat. Context-specific on-line help is arranged by an interactive web site. The ”virtual classroom” is formed by chat forum and communication within groups of students.

The LUVIT concept also consists of support and courses for teachers who want to use the centre for their own courses.

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Summary of emerging issues, suggested for discussio

- Learning is the focus. Experimental approach. ”Reflection in action”.
- The ”double distance” between teacher and student.
- The technical work environment must make things easily understandable.
- The media itself is to be used for communication.
- The demand on strict rules and definitions in a communication process.
- How to arrange the Human contacts.
- To support the motivation of the student on distance is difficult.
- Virus has become a plague in distance learning.
- Steering documentation is stressed.
- ”E-learning”.
- Interactivity is one solution to the communication and human contacts.
- The ”virtual classroom”.

The AVOCAAD education model

AVOCAAD pedagogical approach and framework

In a paper ”AVOCAAD, the experience” (Manual AVOCAAD web-site) the pedagogical approach is described. Life-long learning, learning through exercise, by exploration, by reflection and learning by ”peer examples and critiques” are the key issues. It is stated that by using the Internet, the concept and platform can be used for distance learning to individual students.

The ”AVOCAAD scheme” gives an overview of the exercises in view of their goals.

AVOCAAD is aimed to be software independent. The principal is that you can use your own CAAD software for the exercises and relate to your software deliverer when it comes to how to operate your software.

How does AVOCAAD meet the proposed issues?

”E-learning”

The general concept of ”E-learning”, as formulated in the LUVIT model, has to some extent crossed the minds of the partners of AVOCAAD. The same combination of topics and exercises could be used both for classes at the university and courses and individual students on a distance. The technique and medial sources make no real differences.

The difficulties with communication etc. get more obvious when looked upon from a distance learning perspective, although it is just as critical in traditional classroom teaching. In class teaching it has been so easy to make quick corrections while meeting personally, that so far the disadvantages of spontaneous improvisations have been ignored

Pedagogical approach.

In a comparison between what pedagogical research proposes and the ”AVOCAAD educational model” there are many correspondences. The student is focused and the method is experimental and problem oriented. It also follows the tradition from basic architectural training and the student ought to feel at home.

The special effect of ”Reflection in action”, that is as the work is going on, is in AVOCAAD left to the initiative of the individual student - contact a teacher.

Have the working architects developed self-going or do they need the ”reflection in action” to get along?

The evaluation of and reflections on the results is very much left to the individual student. The goal of the exercise is to learn not to produce. The advantage is that you can make failures and have another try without anyone noticing. On the other hand you might be blindfolded by your own solution and mistakes and would have needed some objective judgement to see that.

Human interaction - student and teacher - student and student

So far the AVOCAAD exercises are used in combination of a traditional class. The teacher can edit it at distance and the students interact with a server in Brussels (for speed or overload reasons, it is possible to install a local server at a specific university). So in a sense it works on distance. The ”Contact a teacher” on the web site is the selection to start an conversation using e-mail. Other media have not been discussed unless ”AVOCAAD conferences”, which so far have been intended for other purposes. So the disadvantages of a physical distance socially has not really been planned for or tested.

This could easily be met by arranging regional or national start and end meetings regular for those individual students who want to use AVOCAAD on distance. The limited experience so far, is very promising.

The original AVOCAAD model is based on the initiative of the students' interest and demand for knowledge, which is thought of creating motivation enough. Maybe there are difficulties that could fairly easily be supported which might make more students carry on.

To meet this the teacher - student contact capabilities have to be developed.

In AVOCAAD students can take a look at the results and comments on exercises of other students. If the delivery is not anonymous it could be signed with an e-mail address. But this does not make contacts between students while doing the same exercise.

This could be met by making a list on ongoing activities available to all students.

The intentions of the AVOCAAD is to be technically usable for every one. This excludes desktop video and other sophisticated media for communication. Conferencing by telephone though is still a neglected possibility. In combination with an on-line contact by the Internet it might be an interesting alternative (if you have a special connection for the Internet)

At the AVOCAAD conference in April 2001 TUL presented a diploma work on an interface to the AVOCAAD web site - ”AVOCAAD centre”. The idea is that the visitor enters a virtual meeting place where all the main functions are situated in a specially designed space. As in some virtual worlds to day on the Internet the visitors are represented by mannikins. This could be an interesting way to support social contacts of all kinds in a distance-learning environment.

Student's interaction with the work environment

The ambition of the AVOCAAD project has been to create a prototype and has to be looked upon as such. For the moment there has been put more action into making the web site interactive for teachers than for the students. On the other hand a simple behaviour is also easier to catch and the absolutely necessary features are there.

Students preparation of the results for delivery and taking part of the others' results could be made more ”professional” and the ”topics” could be more interactive and illustrative using for instance animations.

”Rules for the work”

The first AVOCAAD project partners meetings were dedicated to make definitions of the concept and this ended in up the formalisation of the exercises on the web sites. The titles covers most of the issues asked for in the ”Students manual” so the intentions are clear.

But it does not guarantee that the authors have succeeded in doing so. A recent critical reading through gave a very mixed impression.

The partner group has agreed on creating an ”Instruction example course” to introduce the activities in the AVOCAAD environment as for example made in the LUVIT centre. It would be a great improvement to avoid a lot of misunderstandings when the process has already begun.

Technical support

Usually the users feel that it is due to their shortcomings and will not even admit them. To a certain extent you learn by finding out what went wrong, but if you spend a lot of time without getting anywhere it makes an even bigger problem.

As the intention of the AVOCAAD is to be software independent all software related problems are directed to others. Some preparatory work for a basic layer of softare related instruction is already started. If the teacher - student interaction grows the support of the most usual mistakes in an exercise can be helped.

As long as the main computer communication is within a school the ”virus-problem” is limited. But as soon as individual students in different places enter it is obvious that there has to be a preparation plan for actions in case of an infection.

Questions for the evaluation of AVOCAAD

Some issues emerging from this short survey should be used in the evaluation of the AVOCAAD project for improvements. As students start using the AVOCAAD web site they should be asked to fill in a questionnaire. The questions related to the exercises are already in the ”reflection” part of the exercise and could be copied.

The student’s motivation to complete their work is related to most aspects mentioned here. Few people are encouraged by indistinctness, difficulties and errors. But which actions are experienced as positive and supporting?

To be able to reflect on your work in action could be motivating and helpful for a student. How about the AVOCAAD exercises? Have the working architects developed self-going or do they need the ”reflection in action” to get along?

The teacher independent evaluation of and reflections on results is a specific and interesting method in the AVOCAAD pedagogical framework. It is crucial to have the students’ views and proposals on how this really works.

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