Learning Strategies in a Virtual Learning Environment – Towards Meaningful Adult Online Education

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Introduction

A lot of progress has taken place since the days of the early 1980s when computers' role in education was well in accordance with behavioristic views on teaching and learning. As cognitive psychology has gained popularity, the essence of computer mediated learning has gone through drastic changes. Now that the technological hype that accompanied electronic learning until recently has also started to diminish, more and more pedagogical thought is being put on the meaningfulness of electronic learning.

Having been actively involved in designing online education for university-level students for several years, I have a natural interest in the pedagogical quality of web-based courses and the practical ways of improving it in a virtual learning environment. I am interested in getting insight in the ways the learning strategies typically used by adult learners can be taken into consideration in designing web-based courses in order to facilitate learning. I will introduce a real-life student case to illustrate how the learning strategies work in practice. The interview with the student reminded me of Jonassen's eight criteria of meaningful learning which serve as a good basis for general guidelines for developing better quality online education. However, to be able to draw the guidelines, the concept of meaningful learning should be thought over.

Meaningful learning

There are many views, opinions and definitions on what brings meaningfulness to learning. The conversation that has been evolving around the topic for quite some time has started to spread from the classroom context to online learning. Whereas the earlier direction of dialogue was more from the technology towards pedagogy ("how could we utilize this technical invention in education?") it nowadays is increasingly directed the other way round ("these are our pedagogical needs, which technology will meet them?"). Anne Nevgi and Kirsi Tirri (2003) cite David Jonassen (1995) and share his view on the role of technology in the learning process: technology is a tool that can enhance learning but it should remain in a supportive role and not become the target of learning and attention.

As Eija Mannisenmäki (2000) points out, fashionable terms like self-direction and collaborative and cooperative learning are often heard in online learning developers' speech. The question is, however, what measures could be taken in order to better realize these ideas in new virtual learning environments.

Self-direction as a starting-point

According to Knowles (1975, 1980; in Mannisenmäki 2000) self-direction is a natural characteristic of adulthood and must thus be taken into consideration as a starting-point in educational planning. In self-directed studying individuals take initiative in defining their aims, applying learning strategies and evaluating their results. Knowles (1975, 1980; in Mannisenmäki 2000) points out that there is strong evidence indicating that students taking initiative and responsibility of their own learning will reach better learning results than students who fail to do this. The nature of this kind of studying with individual commitment leads to meaningful learning. A self-directed student is willing and motivated. She also evaluates and observes her

own learning process and along with progress becomes increasingly aware and responsible for her work.

The importance of self-direction becomes especially emphasized in online learning. Compared with a traditional lecture, on a web course the student is forced to do things actively. Unless they do this, nothing happens. The student might be sitting in an auditorium where a lecture is taking place, but without paying attention. The lecturer is speaking and showing her visuals, regardless of the attention of the individual student. The student might even get a false feeling of self-satisfaction ("I participated, I did at least something") for attending, even if no learning had actually taken place. Horton (2000) believes that a web-based course activates learners. He points out that the students "cannot just sit back and listen to a lecture or passively watch a video, they must think and respond" (Horton 2000:22). Horton reminds that although it is possible to design a web course that allows passiveness, it is just as easy to include meaningful interaction and interactivity.

Cooperative and collaborative learning

Self-directed studying must not be mistaken with independent studying that the student does on her own without supervision or contact with fellow students. Moreover, a clear distinction needs to be made between using the Internet as a channel for distributing material and teaching an online course. One of the clear strengths of an online course is the opportunity for adding the element of social networking to distance learning. The teacher has got an essential role in this, but also ways of interacting with other learners should be provided. Gilly Salmon (2002) points out that groups of learners always tend to exchange views and ideas, and that people enjoy learning from the experience of others. She emphasizes that to offer these benefits to learners, a considerable amount of group work needs to be included within any learning programme.

Salmon makes a distinction between cooperative and collaborative learning – whereas cooperation involves a group helping each other towards individual goals, collaboration refers to a group working together towards a common goal. She strongly emphasizes the significance of this type of learning:

> *Collaboration requires an active sharing of information and intellectual resources amongst the participants. The best experience of collaboration by participants for learning purposes enables them to experience both personal, individualistic, useful learning whilst contributing to a community of learners and the support and development of others...participants can comprehend, evaluate, debate, question, integrate and synthesize information online, with suitable e-tivities and ongoing support.*

> *Salmon 2002:144*

It could thus be suggested that teaching online at its best can combine the finest features of both classroom teaching and independent studying. It frees the student from the strict constraints of time and place and thus enables studying also for those who, for one reason or another, could not attend a schedule-tied course. However, the student is not left alone with the course book – the support and resources of the group are constantly present, and in addition to that, the teacher is there to answer questions and give advice.

Criteria of meaningfulness learning

Jonassen introduces a model with eight criteria of meaningful learning, based on constructivist approach (in http://www.coe.missouri.edu/~jonassen/courses/CLE/). According to Jonassen learning environments should keep students 1) active, 2) constructive, 3) intentional, 4) collaborative, 5) complex, 6) conversational, 7) contextualized and 8) reflective.

Activeness means that the student is in a key role in her own learning. She is actively engaged in the learning process, processing information. Activeness leads to students taking responsibility in their learning.

Constructiveness refers to the process in which the student integrates the new information with her prior knowledge in order to make sense of the content of .

Collaboration comes from the students' natural tendency to form communities in which the members can benefit from each others' skills and social support.

Intentionality refers to the learners' active attempts to achieve a cognitive goal. Striving to reach the goal makes the learner think – and thus also learn – more.

By **complexity** Jonassen means avoiding oversimplification of problems. He believes that the students need to be engaged in solving complex and ill-structured problems, otherwise their view of the world becomes oversimplified as well and they remain in a lower level of thinking.

Context refers to teaching knowledge and skills in real life instead of abstracting ideas in rules that need to be memorized. Jonassen points out that this method leads not only to better understanding, but also to more consistent transfer into real-life situations.

Conversation takes place when students become members of a knowledge-building community and seek for ideas and opinions from each other. As a result of this process the students learn multiple ways of viewing the world and solving problems.

In **reflection** the students articulate what they have learned and reflect on the processes. By doing this they will understand more and become more capable of using the knowledge that they have constructed in new situations.

Applying the aforementioned characteristics in the design of a virtual learning environment seems to provide tools for achieving the realization of self-direction together with collaborative and cooperative learning. They can be taken into consideration at all stages of designing a web-based course. E.g. the navigation of the course can be designed to promote activeness, the learning tasks can include many ways of collaboration and conversation, tools for reflection might be provided in the form of a learning diary or equivalent, the questions can be formed in such a way that there is a sufficient amount of complexity, simulations can add real-life context and learning environments can be designed to support learners in articulating what their goals are.

Learning strategies used by adult learners

Being aware of the learning strategies typically used by the target group and taking them into account in designing web-based studies give the designers tools for considerably improving the learning results. As Irene Kristiansen (1998) points out, better learning requires that the students are able to employ effective learning strategies and thus develop their metacognitive skills. Jackie Dobrovolny (2003) lists learning strategies used by adult learners and suggests how these can be

taken into consideration in designing a web-based course. According to Dobrovolny, adult learners use metacognition – the process of self-assessment and self-correction - to learn. Learners engaged in metacognition think about

§ implementing their preferred learning strategies
§ assessing their progress by answering self-assessment questions or practice questions, and determining the degree to which the instruction meets their needs or expectations
§ implementing remedial learning strategies such as re-reading instructional information.

(Dobrovolny 2003: http://www.learningcircuits.org/2003/oct2003/dobrovolny.htm)

The design of the virtual learning environments affects the learners' ability to employ these strategies.

> *Self-assessment and self-correction assumes the ability to easily navigate a self-paced, technology-based course. If the navigation is difficult or confusing, a learner's self-assessment is "I'm lost!" Even when the content is interesting, accurate, and relevant to the learner, if the interface or navigation is confusing, the learner can't get to the content. It's like having a box lunch but the food is sealed inside a locked box and you don't have the key!*

(Dobrovolny 2003: http://www.learningcircuits.org/2003/oct2003/dobrovolny.htm)

The techniques Dobrovolny suggests for helping the students to effectively self-assess and self-correct include frequent embedded questions, self-checks, practice exercises and hands-on simulations. She also emphasizes the importance of providing feedback and correct answers to enable the students to correct their mistakes and learn from them. The usability of the virtual learning environment and the structuring of information should also be designed to facilitate re-reading the content. A table of contents, a searchable index, a site or content map and a user-friendly navigation system are crucial in this.

Dobrovolny mentions that in addition to metacognition, adult learners typically use strategies like reflection, prior experience, conversations and authentic experiences to learn. Reflection includes techniques like visualizing the use of the new information to solve real-life problems, attempts to fit the instructional content into the big picture, comparing one's way of using the new skill with someone else's way of doing it and recalling sections of the course by frequently thinking about the practical applications of what has been learned. Designers can help the students use this strategy effectively by exemplifying how the learner might use the content, how the content fits into a larger framework, and alternative ways to apply the content. The examples should vary from simple to more complex, enabling the students to gradually improve their knowledge and skills. The students might be asked to create their own examples. Moreover, learning diaries, rhetorical questions, visualization of the relations between the pieces in the big picture and analogues are techniques that can promote reflection.

Building on prior experiences is the core idea of constructivism. Prior experiences might either cause confusion or validate the new information, depending on whether the new information seems to be in conflict or consistent with the learner's previous knowledge. According to Dobrovolny, the web-based course should be designed to help students create links between the course content and their prior experiences or it should provide solutions to problems they have faced in the past. Learner analysis is a useful tool – however, it is not always possible to arrange. In such cases the designers might e.g. create practice questions that are based on a common experience the students are likely to have had.

Conversations are an important learning strategy for adults, and as Dobrovolny points out, the critics of online training tend to blame this type of training for lack of face-to-face contact. However, as it has already been pointed out, there are effective ways of creating good opportunities for conversation on a web course. In addition to online discussion with fellow students and the teacher, adult learners also discuss their training with other people, like friends, colleagues and family members.

Learning with the help of authentic experiences involves attempts to integrate the new information into one's day-to-day responsibilities. Learners are disappointed if the contents of the course are not applicable in authentic situations. Once they finish the course they are usually eager to use their new skills in real-life situations. This motivation can be enhanced by providing learners with a list of possible situations they might encounter in which they would need to apply what they have learned. Another alternative is, of course, to ask the students to create the list themselves.

Adult learners' metacognitive learning strategies in practice: Antti's case

The case introduced in this passage gives insight into the question on the metacognitive learning strategies used by adults in a virtual learning environment. Antti Laitinen is a 25-year-old car mechanic from Lahti, Finland. He has recently completed the basic studies (1,5 years) in social psychology at the Open University of Helsinki. The studies took place entirely online.

Antti's motivation for starting the studies derived from his dissatisfaction with his socioeconomic status. He had previously qualified from a vocational school as a car mechanic and worked currently at a car repair shop. Antti's social network consisted largely of people in a corresponding situation and thus he had very little knowledge about university studies. He had, however, a strong willingness to find out if academic studies would, after all, be possible for him. Doing shift work and having such little experience in studying he found this quite a challenge, but after finding out on the Internet about the possibility of taking the basic studies of social psychology online he decided to give it a try. Learning online seemed to him like an excellent option as it would have been impossible to attend in studies that require schedule-tied attendance because of the shift work. Moreover, he felt that the online environment saved him from the awkwardness of corridor conversations regarding previous studies and career.

The beginning was not easy. It was not only the virtual learning environment that was new, but the entire idea of academic studies was even more so. Antti describes it as follows (translations mine):

> *At the beginning of the studies a lot of energy and time went to getting used to academic language and learning strategies. At first I didn't even know what I was supposed to learn.*

In spite of having no previous academic learning experiences and no awareness of learning strategies that he could have consciously applied, Antti naturally utilized the strategies introduced by Dobrovolny. The following extract from his interview illustrates how he used metacognition, reflection and conversation to help him to learn.

> *Reading a lot, over and over again, helped me in getting used to academic writing and of course in learning about the content. The discussions were very useful, there*

could have been even more of those. The good thing about the discussions in the virtual learning environment is that the conversations are saved there. If you got a brilliant idea you could always return to that later. In face-to-face conversations things are often forgotten afterwards. The learning diary was maybe the best tool, it helped in summarizing things can staying on track with what you had learned.

The web course contained many collaborative activities that were conducted in the discussion area of the virtual learning environment. In some cases the teacher also participated by moderating the discussion in order to lead it towards the desired direction and to keep it on track. Antti felt that the discussions moderated by the teacher were more educational and beneficial than the free discussions with other students. In the beginning he found it quite difficult to express himself in the discussions - which he believed was partly because of his lack of previous experience on the field, partly because the participants were still unfamiliar to each other and no sense of community had developed yet. He found the situation quite similar to a classroom situation at the beginning of a course when socialization has not yet taken place. However, the participants' personal profiles in the learning environment enhanced the sense of belonging to a group, and as discussions continued, the learning community became stronger.

In addition to the online discussion with fellow students and the teacher Antti also frequently talked about his studies with friends, colleagues and family members and sought the company of other university students to discuss the content of the studies in order to fit the new things into a wider context and to broaden his perspective. He pointed out that explaining things to others made the picture clearer to himself.

Antti was able to complete the studies remarkably successfully despite of his unusual starting-point that caused him a lot of extra work. Moreover, he now has a strong urge to continue his academic studies and later on graduate with a university degree. This brings up another interesting aspect of online adult education. Students with less experience in academic studies and applying effective learning strategies might feel insecure about attending lectures at a university. Antti mentioned that the certain facelessness of the web environment facilitated his stepping into the academic world. In the virtual learning environment students do not have social roles and thus get stamped in the same way as in a classroom context. According to Antti's experience, personal characteristics and other students' expectations did not affect his learning results the way they had done in his previous studying situations.

In the personal profile everyone could determine themselves how much they wanted the others to know about them, or in what kind of light they wanted to be seen. It didn't matter if you were a single parent or a pensioner. Everybody was on the same line.

Participating in online education provides students with little or no prior experience in academic studies a chance of starting their studies in a familiar environment. Especially in a country like Finland where the use of the Internet is very widespread within all socioeconomic groups, the net is a familiar environment to almost all young adults. The university auditorium, on the other hand, is not. Web-based open university education has long been easily accessible to everyone, but virtual learning environments brings noteworthy additional value to it by providing outstanding conditions for learning to learn and practice the use of effective learning strategies.

Conclusion

Although the term meaningful learning cannot be comprehensively defined, it could be suggested that in order to increase the meaningfulness of learning the learning environment should provide the students possibilities to utilize effective learning strategies in order to achieve better learning results. Neither is there one right answer for how this should or could be done, but having a clear picture of what meaningfulness in education consists of will help the developers of online education in the design work and give a good basis for the course. In a more practical level the learning strategies and supporting them in the virtual learning environment become a question to be thought over. There are many ways of taking this into consideration in the design of the web-based course and thus facilitating the learning process of the students.

The online environment can also function as an environment for learning and practicing more effective learning strategies. The web brings many new aspects and possibilities to education – the above discussed issue of equality being one of them – and investing time and thought in good design is certainly worth the effort.

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