Transforming learning environments and learning tools

Key words: learning environment, transformative learning, learning tools and ICT

In the course of the ENSI conference in March 2009,a variety of learning environments were, sometimes intentionally and sometimes unintentionally, created by the speakers. This provided the participants with 'food for debate' regarding the limitations, challenges and possible contributions of these learning environments to transformative learning.

Learning environments

During the conference social scientist's love for definitions and elaborated bullet point lists quickly became apparent. I must admit that I am not immune to their charm. We keep adding more and more words, trying to fit in each possible bend in the road, ending up with a concept the size and length of a superhighway. I fervently believe that we also have a responsibility to translate these findings into something useful and tangible for practitioners working in the field of ESD. This is by no means an easy task. Nonetheless, I would like to start with Manninen's assertion (2009) that there is a need for a concrete definition of learning environments in order to insure clarity and fruitful discussions. The concept of a learning environment has different meanings to different people (e.g. ICT designer, teacher and architect). It would benefit the many teachers faced with the task of creating 'learning environments' if a common language were available. One of the definitions Manninen provides originates in the Finnish National Core Curriculum for Basic Education (2004, p. 16) and reads: "The learning environment refers to the entirety of the learning related physical environment, psychological factors and social relationships. In this setting study and learning take place." This definition is broad and not very clear about the relationships between the elements. In my view a learning environment exists within the experience of an individual. Every participant and teacher will perceive a different learning environment because each has his or her personal frames of reference (Goffman, 1974). Although a teacher can greatly influence a learning environment, he or she can never create one. I myself prefer to define a learning environment in the context of education for sustainable development, in terms of the physical (or virtual) setting, in which a participant finds him- or herself trying to make sense out of things, working together with, and affected and supported by co-participants, influenced by, and under the active guidance of a facilitator, guided by institutions (such as cultural routines), all in the pursuit of individual or group learning goals, within an organized and co-designed learning process (Tauritz, 2007).

Transformative learning

The organized learning process, including the use of educational tools and didactical approaches taken, is an important part of the learning environment. Educators are faced with 'a candy store' filled with tools and approaches in all imaginable flavors. It became quite apparent during the conference how difficult it is for many of us, including scientists, teachers, policymakers and educational designers, to change the ways in which we teach and transfer information. We repeatedly suggest that there is a need for participation, learning by doing, collaborative learning processes, creativity, et cetera (Mayer and Tschapka, 2008). Yet during the conference, which can certainly be defined as a particular learning environment, the standard sort of one-sided dissemination of information which we fault for inhibiting so-called transformative learning processes, was frequently displayed. "Transformative learning involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and irreversibly alters our way of being in the world (O'Sullivan, 2002)." Although O'Sullivan goes on to further elaborate his view, this seems to be the core of his concept.

ICT: learning environment or tool(s)?

One of the questions raised during the conference was whether or not ICT can be called a learning environment. Bearing the definition of a learning environment as a personal experience in mind, the answer is quite clearly: "No". It was concluded that ICT consists of a set of learning tools that can be employed to achieve certain learning outcomes, to engage learners and to spark curiosity and creativity.

Example of ICT use in ESD

During the conference, Co$_2$nnect, a school campaign investigating CO_2-emissions related to travel to and from school, was presented. It exemplifies the use of ICT in ESD potentially leading to transformative learning. Schools all over the world can sign up on the campaign website. Students make use of a digital platform containing tools for calculating and comparing CO_2-emissions between schools, both nationally and internationally, links to relevant web resources, photo galleries, and help sheets designed to assist teachers in evaluating and discussing results. Students can submit questions to a climate and transport expert and are encouraged to generate and share ideas on how to reduce CO_2-emissions and initiate a dialogue with the local community. The project gives children a voice and it offers them the opportunity to connect with children in other regions and other countries. Co$_2$nnect is also an example of cross-curricular education connecting directly to the life world of children. The learning outcomes anticipated by the developers of this campaign include: a better understanding of climate and transport issues, enhanced participation, cooperation and communication skills and, certainly not least, motivation to take an active role in society. If these are realized, it can be said that transformative learning took place. The short term learning outcomes that are actually achieved by participating in Co$_2$nnect will be analyzed by a group of Malaysian researchers.

Digital platforms, such as the Co$_2$nnect website, provide information about their use by participating countries and schools, potentially steering scientists in the direction of interesting research topics. For example, examining the participants' list we see that more then 470 Romanian schools have signed up, whereas, only 3 Dutch schools have joined (on April 5th 2009). Many Northern European countries seem to be less involved in this project than would be expected on the basis of their high quality access to the Internet. What is happening here? Are these differences based on culture? Or perhaps a saturation of the field in which education for sustainable development takes place is the cause of these differences? Are there too many similar projects with digital platforms being developed? And if so, which are the most effective of these platforms? How can we assist teachers in finding suitable projects for their students amongst the many that are on offer?

Questions for future research

As a reporter, I was confronted with the challenge to 'listen in between the lines' of the participants' conversations and to search for possibilities for the enhancement of the practice and theoretical fundaments of ESD. Many interesting suggestions emerged during the conference. Some could immediately be put into practice. When we view the conference, for example, as a learning environment other participants can be seen as an important element in the experience. One participant noted that teachers, and especially young learners, are seldom seen at conferences, yet we sit there and talk about their learning and teaching processes as if we know what is relevant and attainable. Involving these groups in a more substantial manner, for example through specially designed workshops, could lead to a profound increase in the development and dissemination of knowledge directly applicable in practice. It is also interesting to consider more creative methods for the presentation of the results of the conference, as these could lead to more engaged participants and therefore better learning outcomes. A novel approach was taken at this conference whereby junior researchers played the role of reporters during the workshops and panel discussions. When I heard that a colleague was planning an alternative and imaginative way of presenting the results of her workshop about drama and art, I at once started thinking what I could do with my group. In practice, however, time constraints made me fall back on a more conventional format. I challenge all of us to search for ways to practice what we preach.

Other questions which became manifest during the conference could steer scientists towards interesting research regarding learning tools such as ICT. An important question raised was: "What can ICT do for education for sustainable development, which cannot be done without ICT?" This question needs answering. Although there is a growing body of knowledge regarding the use of ICT in education, not so much is known about either short, or, even more importantly, long term learning outcomes. For example, how is empowerment affected by the use of ICT within the context of education for sustainable development? To what degree is transformative learning taking place? Researching long term effects is very challenging. Nonetheless, searching for methods to measure and understand the long term effects on behavior of particular learning environments, applied tools and other strategies is essential and deserves researcher's whole-hearted attention.

During the workshop about the use of ICT, one participant suggested that the website of the Co$_2$nnect campaign should be designed differently. Currently the website is geared to the

educational system, with children using the website at school. A next step might be to connect directly with these children outside of the school system. However, is this really desirable? How should issues such as indoctrination and the potential for creating guilt be addressed?

ICT offers the possibility for children to connect with children in other regions and even other countries. In practice, schools interact much less with other schools than they might. What is necessary to get schools to interact more with one another? One limiting factor might be that many teachers lack the skills and knowledge needed to work effectively with ICT. Students often know much more about the possibilities ICT offers than their teachers. In these situations teachers need to embrace new roles as facilitators, rather than 'ultimate' knowledge authorities. Another relevant factor could be variations in language skills. Children communicating with children in other countries often use English as their common language. This could create a significant barrier for younger learners who are not proficient in English. If such issues are playing a role, how can they be overcome?

As a group, it is our job to see that the knowledge about learning environments which we assemble as well as the learning tools we develop, both of which have the potential to greatly enhance transformative learning processes, become readily available to practitioners in the field.

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