An open world and open education? Sociotechnical mechanisms…

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1. Introduction - some thoughts

Is our world an open world or do we just think it is open but it is not? This is of course a rhetorical question. It is not open. But we think it is open. To give a detailed answer on the question, we first have to clarify what "open" is or should be. When we argue that an open world is to have access to information than it is more open than years ago. But the term "open" also refers to the concept that "everything is possible" and humans we would live in a world where we all have open systems and networks. But, no, our social and sociotechnical systems are not open. Human communication is a complex phenomenon and some studies from sociology and workplace studies illustrated that humans always create social structures that create rules and formal roles for a better coordination and organization. But these formalizations also restrict and limit behavior (case 1, see below)

Thus, instead of claiming an open world, I propose the term "half-formalized world" that stresses both a) the possibilities of Social Media applications and b) the process of formalizing the Informal through human participation.

When this is our world then we have to ask how can we make education to an "open education"? I argue that participatory design approaches like Design-based research (DBR) are useful to design education. Together with the stakeholders, teachers, instructors and students, open education can be designed – a systematic and transparent approach from designing first ideas to half-structured, half-formalized teaching and learning concepts (case 2, see below). An example of how to apply DBR is given (case 3, see below).

2. Three case studies

Case 1 -- The study by Jahnke (2009) examines the emergence of social and socio-technical structures in an online community, which was established as part of an organization. Are processes of change over time to perceive and if so, what? The investigation took place from 2002 until 2008. During this period, the learning community was continuously monitored and data collection took place (interviews and online surveys). One result is that such new structures emerge, which are formal, ie the emergence of formalized structures, more rules and regulations, it became apparent over time that are not caused by the technical system but by the social actions.

Case 2 -- The contribution by Jahnke et al. (2009), a case study is presented in which the research paradigm "design-based research" (DBR) has been applied. The aim of the paper was to illustrate the performance of the DBR at the example of the PeTEX project. The study shows how a new e-learning scenario can be designed. The special feature is that e-learning processes has been associated with engineering laboratory experiments of manufacturing technology (mechanical engineering). The live experiments can be remotely controlled and fernbeobachtet at three European locations by learners through an online learning environment. For this newly-tailored educational scenario, new approaches of teaching and

learning are needed in the intersection of the approaches to experimental, problem- and action-oriented learning. Together with the involved students and teachers, a moderated bottom-up procedure has been developed and modeled with software support. The DBR is explained in detail, there are advantages and disadvantages discussed.

Case 3 -- In this article by Terkowsky et al. (2011), the development of tele-operated experiments and their design for distance learning is focused. For this, new dimensions of knowledge acquisition and learning has been designed and investigated. The Design-based approach were applied. The article explains the didactic challenge associated with the development of remote-controlled laboratory experiments in engineering education. The EU-funded project PeTEX is a platform for e-learning and remote controlled experimentation. The prototype uses the Moodle platform. The goal of this project was to design learning in individual and group work for different target groups such as students and professionals to connect and to allow them to delveop a learning community and to establish sustainable learning activities. Therefore, a didactic model was created, which combines the remote experimentation with the platform, teaching content and learning activities to support successful learning for different learning groups.

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Further reading

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