

Chapter 15

Issues and Challenges Associated with the Design of Electronic Textbook

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ABSTRACT

This chapter investigates issues associated with the design of an electronic textbook and describes meta-systems learning design (MLD). MLD was founded by the Globalisation G- Anthropology A- Existentialism E paradigm (GAE). This paradigm argues the transition from closed pedagogical systems to more open educational systems. The core element of MLD is the pedagogy of a competence development triggered electronic textbook. The functionality of MLD is assured by a flexible and dynamic instructional strategy. This new strategy provides an operating framework both for teachers and for learners through self-regulation assessment.

The contents of this chapter are framed under three categories: the theoretical approach, pedagogy of competence development and practice. Conclusions are provided at the end.

INTRODUCTION

In this era of social media, all pedagogical systems have been affected by globalization and have become part of a single global educational system (Kalantzis & Cope, 2006; Afanasiev, 2009; Pullen, 2010 etc.). The global educational system became “more open and flexible” (Frick, 2004) than pedagogical system. An instructional based approach

has been replaced by a learning based approach. The learning based approach emphasizes “process-oriented teaching” (Bolhus, 2003); “personalizing e-learning” (Bollet&Fallon, 2002); and “learner-centered assessment” (Huba&Freed, 2005). These represent the main criterions of adaptation and accommodation to learner –centred learning environments. As was shown by Midoro (2005, p. 32), a shift from teacher –centred instruction to learner centred instruction is needed to enable student to acquire the new 21st century knowledge

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and skills. One of the possible solutions arises from investigation the metaseystems approach in study the globalised learning processes. The proposed solution was resided in GAE paradigm and in didactical model, which seeing learners as knowledge workers acting in physical - virtual learning environment (Railean, 2010a).

The electronic textbook (ET) is one of the main didactical tools (Polat, 2004). Many researchers investigate the design of the electronic textbooks and propose different models based on behaviorism, cognitivism and constructivism theories (Pascoe, Sallis, 1998; Brusilovsky, Schwarz&Weber, 2006; Zaiteva&Popco, 2006; Iasinschii, 2006 etc.). The problem of effectiveness of electronic textbooks for real didactical process is studied with embedded activities on student learning. In his PhD thesis Porter (2011) note that ET, also known as digital texts, e-texts, ebooks, e-books, electronic books, and hypertext books, represent a marriage of a hardcopy book within an electronic environment with software, such as Adobe Acrobat PDF, XML, SGML, HTML files, or hardware, such as a Palm Reader, E-Reader, Sony Reader, and Amazon's Kindle among others. ET are available in different formats, which are portable, transferable, and searchable. Author relates about the importance of the Graphical User Interface; Hypermedia, Hypertext, Multimedia, Usability and user interface.

The design of ET evolves from instructional design to learning design. Instructional design is more related to behaviorism, but learning design – to constructivism. Cooper (1999) observed the shift from behaviorism to constructivism models of design. Siang&Duffy (2004) describe the evolution of models of learning in design. The learning design models highlight the role of metaseystems learning design (MLD). MLD differs from instructional design, which is “a systematic process that is employed to develop education and training programs in a consistent and reliable fashion”(Reiser&Dempsey, 2007). Instructional System Design divides the instruction design

processes into analysis, design, development, delivery and evaluation phases.

The core idea of MLD is that ET is used in complex learning environment, which are “global and local, real and virtual” (Midoro, 2005, p. 42). In such environment ET enables didactical activities to be transformed from passive to active activities. In order to do this, the content of the ET must be customized to each student and needs to have included the hermeneutic dialog. The initial assumption with respect to the value of ET in the complex environment is that hermeneutic dialog has a positive effect on online pedagogical communication through facilitating learning structured in the manner of a well-organized knowledge graph. In such a structure, as compared with alternative structures, it is easier to implement multimedia, hyperlinks, hypertext, audio, video etc. and to form learning outcomes. In addition, the structure of ET can be easy personalized. One possible technology that can be used for this approach is proposed by Railean (2008a), namely, electronic textbooks in an electronic portfolio.

FROM BEHAVIORISM TO CONSTRUCTIVISM ISSUES IN LEARNING DESIGN

In instructional design and instructional system design many models are related to behaviorism, especially to theory of conditioning. According to this theory, studied by H. Ebbinghaus, E. Thorndike, I. Pavlov, W. James, S. Pressey etc., learning can be programmed as stimulus S and response R . The conditioned stimulus is associated with the unconditioned stimulus within the brain, without involving conscious thought. According to Truta (2003) the behavior is a function of external stimuli S , so as $R = f(S)$, where R – is a behavior.

The second, named the theory of operant conditioning, proposed that stimulus S is associated with response through reinforcement I and punishment P . In instructional design the theory is

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