

Chapter 35

Digital Textbook in Personal Learning Portfolios: A Case of Interdisciplinary Pedagogical Innovation for Sustainability

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ABSTRACT

This chapter investigates a case of interdisciplinary pedagogical innovation for sustainability: digital textbooks in personal learning portfolios. In particular, its aim to provide a mean by which the metasystems learning design approach can be applied in sustainable development of user engaged in a powerful learning environment. Indeed, it is suggested that learning is a complex process within the learning environment and is composed of information/communication, cognitive activity and environmental assessment. The analysis of learning requires a complex investigation of the educational system based on understanding the inputs, outputs and process characteristics and their trends. These can be done on the basis of interdisciplinary pedagogical innovation for sustainability. Such innovation could be achieved if learning outcomes will be designed according to core crossprinciples and their norms of application. The chapter is motivated by the fact that Google Drive provides a useful service for the metasystems learning design approach, allowing to store, personalise, peer review and access files anywhere. These results highlight how both core concepts and metasystems learning design principles need to be considered in tandem in order to create a powerful learning environment that will guarantee the learning outcomes.

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INTRODUCTION

Philosophy seeks to bring Aristotle Lyceum and Epicure Garden to Plato Academia and distance learning methodologies. Firstly, textbooks and audio-visual added values to non-verbal communication. Then, programed textbooks and asynchronic distance education change our vision about pedagogical communication, proving the role of feedback. Soon, hypermedia, multimedia textbooks and knowledge management systems have been emphasizing the learning environment, which became real and virtual, local and global. Then, UNESCO became the lead agency for the UN Decade of Education for Sustainable Development (2005-2014). Education for Sustainable Development allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future. However, in truth, it has taken many years for decision makers to understand that technology needs to be focused on environmental, societal and economic sustainability. The role of education is to apply the most effective strategies in learner-centered learning environment to form self-regulated students whom are more adaptable at challenges. One of the possible models is *integrative structure of competence*.

It's self-evident that education and technology should be focused on sustainability. This requirement proves the need to investigate the learning outcomes based on behavioral actions and technological processes (information/communication, cognitive activity and assessment) quality. The important questions regarding quality in education are not those that focus on obtained marks at final exams, although these are important. Students will have the most successful experience with integrated structure of competence allowing to become life-long learners.

The aim of this chapter is to analyse the role of interdisciplinary pedagogical innovations for sustainability. We look for a sustainable solution in learning environment with digital textbook that can handy metasystems learning design concerns

in terms of background knowledge, processes and learning outcomes. Metasystems Learning Design, due to its capability in relationship building of the significant concepts in philosophical, psychological, pedagogical, cybernetical and knowledge management domains, is an alternative of Instructional Systems Design. Having adopted digital textbooks the issue of structure and content seems to be modeling of the *hermeneutic dialogue between author and user*. According to Metasystems Learning Design approach, entities such as What, Which, Who, Whom, How and Why, which address the significant terms with regard to understanding issue, are selected by and for the learners. These approaches differ when is designed for the closed and open educational systems. This chapter will be of significance to those interested in sustainability.

ORGANIZATION BACKGROUND: EDUCATIONAL SYSTEM AS AN ORGANIZATION

Closed System

Whether or not our society will be able to achieve its goals in the field is ultimately related to the educational organization (Reller, 1949, p. 35). According to this author, organization represents the process (or result) of arranging interdependent elements (children and youth) into a functional and logical order. The educational organization is built by creating a relationship among teachers, administrative personal, parents, community forces, local school districts, school trustees, the state, and the nation.

Educational organization could be analysed as a *closed system* or as an *open system*. Educational organisation, viewed like a closed system, represents an artificial pedagogical system with the scope of education. The main figure is the teacher, who is the expert in the domain. However, didactical processes are modelled as instructional

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