

Chapter 4

Metasystems Learning Design Theory: State-of-the-Art

ABSTRACT

Open textbooks play an important role in skills development. They provide open access to global knowledge and offer the collaborative way for problem solving, critical thinking, and development of on-demand skills. The emergence of the open textbooks represents a metasystem transition from printed textbooks to OERs. This causes a contradiction between what students learn, how they learn, and what they need to learn for better adaptivity at the variety of learning environments. This chapter explores the state-of-the-art in metasystems learning design theory and norms for practical applications in designing of the open textbooks. It is argued that learning is a metasystem transition from knowledge acquisition to soft skills development and that learning is more than the achievement of the instructional objectives. The open textbooks may have an important impact on self-regulated learning if the design of open textbook will be focused on metasystems technology of thinking.

INTRODUCTION

The open textbook theory is on the way to address global issues of education: challenges of globalization, the quality of learning, qualitative didactical materials, skills development and others. Recently, it was observed that open textbooks are valued resources for skills development. This finding may be

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analyzed from the perspective of Metasystem Transition Theory. The core idea of this theory is the emergence through the evolution of a higher level of control.

The term “Metasystem Transition Theory” was coined by Turchin in his monograph “*The phenomenon of science*” (1970) and further developed by Francis Heylighen in “*Principia Cybernetics*”, John Maynard Smith and Eors Szathmari in “*The major transitions in evolution*” (1995) and other scientists. The first theoretical ideas devoted primarily to metasystems were proposed in the seventies of the past century. Erich Jantsch (1970, p. 32) observed that policies are focused on system analyses and not on system design. In his opinion we will remain locked into the past if we don’t learn how to regroup our values and norms in a way that will enable us to cope effectively with the problematic situations arising from the dynamics of the complex social systems that require a more rational creative process leading to the purposeful design and implementation of successful sustainable policies.

In this chapter, we round up the most recent investigation in Metasystem Transition Theory from the seventies. The main idea of the Metasystem Transition Theory is that systems evolve to become more complex, adaptive and flexible by successive closures encapsulating components in a larger whole. There are so many examples that may be analyzed from the perspective of Turchin’s Theory (e.g. educational systems, school systems, schoolbooks etc.). In many countries, textbooks are central to the education system. According to a widely accepted definition, a textbook is a manual of instruction in any branch of study. Nowadays, most textbooks aren’t published exclusively in printed format, and many are now available online (e.g. digital textbooks, iBooks, electronic books, open textbooks etc.).

From the perspectives of Metasystem Transition Theory, open textbooks may be considered one of the encapsulating components in OER. The emergence of open textbooks is caused by openness and global calls for quality in education. Open textbooks up didactics at the level of mathematics, offering teachers and students the “right” to choose the best content for teaching, learning and self-instruction. In other words, the open textbook is a pedagogical resource & learning tool for the most “actual” situation.

This chapter proposes to study education from the perspective of metasystem transition theory. The metasystem components are a learner(s), teacher(s), content that exists in “a dynamically changing environment that demands dynamically responding behavior, i.e. they must possess the ability to adapt

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