Chapter 37
GIS^S and GIS^P Facilitate Higher Education and Cooperative Learning Design

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ABSTRACT

International cooperation in higher education management has successfully expanded on Geographic Information Science and Systems (here named GIS^S, for the "space of places"), which facilitates the exchange of worldviews among learners. On a general level, after clarification of the notions of "design," "pedagogy," "GIS," and "path dependency," the potential for self-organized Web-supported learning is explored. Global socio-economic trends in land-use, energy, and economy (i.e., collective evolutionary learning) serve to provide lessons for individual learning procedures. Path dependency is a concept used both in economics and education management. This chapter suggests using a collaborative, dialogic learning structure that allows learners to act on several layers of reality simultaneously: the cognitive, discursive, social, interactive, and integrative. Strategies for graphic notation of social procedures within "social spaces" are suggested. Graphical Information on Social Procedures (here named GIS^P, for the "space of flows") should facilitate the design of online courses and blended learning courses because it allows for analyzing the interplay of different horizons and layers of human interaction. To sum up, this chapter uses several analogies from global socio-economic trends in order to describe the highly complex challenges and opportunities for auto-adaptive online pedagogy and the design of higher education that leads towards the dynamic self-responsibility of learners.

INTRODUCTION

Geographic Information Science (GIS) represents an important investment in the portfolio of transnational higher education management, as proven by the internationally highly successful GIScience curricula provided by Salzburg University (UNIGIS 2012). Two cases embedded in a long-standing structure of

transnational cooperative education management (ACA*GIScience 2012) pertain to GIS in Central Asia (Ahamer et al. 2009; 2010) located in Kyrgyzstan and Tajikistan, notably to energy, land-use, and economy.

For these three fields, the following Section "Main Concepts" will provide long-term trends of global time series on a per-country basis. Such trend analysis based on the author's Global Change Data Base (Ahamer 2001) tries to shed light on the concept of "path dependency" that has become crucial for new approaches in economic theory, theory of transnational development and didactic design.

More detailed experience and analysis shows that in both developmental cooperation (Ahamer 2012) and didactic design of transnational higher education management, the sole adherence to this concept of path does not capture all practical complexities of truly interdisciplinary and intercultural cooperation (Ahamer 2013).

Hence, personal esteem and multiparadigmatic mutual understanding will always be a decisive ingredient of transnational cooperation for education management. Therefore the author proposes to envisage not so much the design of educational products but rather the design of educational processes and procedures.

MAIN CONCEPTS

What Does "Design" Mean?

This article concentrates on the "design of procedures", more specifically on the design of learning procedures, pertaining either to (1) societal or to (2) individual learning.

Learning design or course design, in this sense, suitably triggers social procedures in the group of learners that optimally induce them to actually change their real-world behavior – which is ultimately the objective of any learning activity. Learning design hence means the design of procedural social rules for learners; it means also "rule design."

What Could be "Education"?

In an idealist sense, education management and pedagogy could mean designing the framework conditions for personal development in such a way that a human being feels encouraged to effectively walk his or her own path to develop his or her own potential. Education and pedagogy can mean gardening, i.e. integratively caring for growth processes.

Online pedagogy, in this sense, opens the pathway for learners to (1) retrieve sufficient information, sufficiently well organized to function as travelling supply and to (2) be guided sufficiently well on a path to solve one's own real-life problems without compromising the development of one's own orientational responsibility. The notion of "self-adaptive learning" (Atif et al., 2003) describes such an equilibrium between self-regulation and outside regulation in learners.

What Roles do "GIS" Play?

This abbreviation's usual meaning is "Geographic Information Sciences and Systems" (GIS^S), but for the sake of this paper, a second meaning will be introduced later: "Graphical Information on Social

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