

Chapter 37

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

Gilbert Ahamer

Austrian Academy of Sciences, Austria

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

DOI: 10.4018/978-1-4666-9845-1.ch037

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

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/giss-and-gisp-facilitate-higher-education-and-cooperative-learning-design/149525

Related Content

On the Intersection Between Speaker Installations and Urban Environments: A Soundscape Design Perspective

Gunnar Cerwén (2019). *Geospatial Intelligence: Concepts, Methodologies, Tools, and Applications* (pp. 1071-1093).

www.irma-international.org/chapter/on-the-intersection-between-speaker-installations-and-urban-environments/222936

The Digital Geography Lab at Salem State University: The Evolution of One of the Oldest Educational Digital Geospatial Labs

Kym Pappathanasiand Stephen S. Young (2012). *International Journal of Applied Geospatial Research* (pp. 86-96).

www.irma-international.org/article/digital-geography-lab-salem-state/68858

Satellite and Ground Estimates of Surface and Canopy-Layer Urban Heat Island: Comparison and Caveats

Bakul Budhiraja, Prasad Pathak, Girish Agarwaland Raja Sengupta (2021). *International Journal of Applied Geospatial Research* (pp. 1-21).

www.irma-international.org/article/satellite-and-ground-estimates-of-surface-and-canopy-layer-urban-heat-island/289374

GeoCache: A Cache for GML Geographical Data

Lionel Savary, Georges Gardarinand Karine Zeitouni (2009). *Handbook of Research on Geoinformatics* (pp. 350-368).

www.irma-international.org/chapter/geocache-cache-gml-geographical-data/20422

Linking Scientific Research to Development Agenda: The Case of a Hydrometeorological Project in the Notwane Catchment, Botswana

P. K. Kenabatho, B. P. Parida, B. Matlhodiand D.B. Moalafhi (2018). *Handbook of Research on Geospatial Science and Technologies* (pp. 374-391).

www.irma-international.org/chapter/linking-scientific-research-to-development-agenda/187739