

# Chapter 25

## Authentic Learning in Second Life: A Constructivist Model in Course Design

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### ABSTRACT

*This chapter will examine the relationship between a constructivist teaching approach and online learning experiences in the Virtual Worlds of Second Life, using a specifically constructed MBA-level course teaching Systems Analysis and Design. A research study was incorporated in the course design to test the Constructivist Learning Design (CLD) model (Gagnon & Collay, 2006) and social (use of individual- vs. group-oriented activities) domains. This chapter will cover: (1) fundamentals of Systems Analysis and Design course; (2) current research of Second Life in education; (3) course design based on CLD models; and (4) research data analysis of course delivery through constructivist learning in Second Life and student learning experiences in the Virtual Worlds.*

### INTRODUCTION

Information Systems (IS) lie at the heart of many of today's technological wonders. Without information systems our communications networks, energy systems and even such simple systems as automobiles would not function. Information Systems curricula can be found in disciplines ranging from Geographical Information Systems (GIS) to

Health Information Management Systems (HMIS) to Management Information Systems (MIS). A key element of any Information System is the Analysis, Design and Implementation of the system. Most educators in the Information Systems disciplines regard Systems Analysis and Design (SAD) as the critical course for IS students (Avison, Cole, & Guy, 2006; Bajaj, Batra, Hevner, Parsons, & Keng, 2005). The teaching of SAD is affected by many factors such as the instructor's experience, the pro-

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file of the class and the needs of the employers to mention but a few (Harris, Lang, Oates, & Keng, 2006). Technology Mediated Learning (TML) and Distance Education (DE) are emerging as a key method for the delivery of instruction to students. Distance Education is predicted to increase by over 300% in the next 5 years (Moller, Foshay, & Huett, 2008). But at the same time the depth and breadth of research on TML and DE is limited (Alavi & Leidner, 2001). This chapter examines the intersection of the domain of teaching SAD and TML. In particular, it seeks to examine if a Constructivist Learning Theory applies to learning in the Virtual Worlds of Second Life.

## **Description of Systems Analysis and Design Courses**

Systems Analysis and Design (SAD) seeks to create, develop and implement an Information Systems using the Systems Development Life Cycle model of Planning, Analysis, Design and Implementation (Dennis, Wixom, & Roth, 2006). The two major approaches to SAD are: 1) the structured approach that seeks to improve the system by examining the processes inherent in the system and then developing a new system from these processes, and 2) the object-oriented approach that seeks to improve the system by examining the data associated with the system and then developing a new system based on the data.

The object-oriented approach was initially developed by software engineering professionals. The object-oriented approach takes a bottom up approach to systems development. Thus, the system is described based on the business processes and the data required to drive them. The system is described using various diagrams, with the most common being the Unified Modeling Language diagrams developed by Booch, Jacobson and Rumbaugh (Booch, Rumbaugh, & Jacobson, 2005; Rumbaugh, Jacobson, & Booch, 2004). At the heart of UML are three cardinal

principles: Iterative and incremental – since system development proceeds through a continuous series of reevaluations and improvements, all UML diagrams describing the system must be reviewed and revised to reflect the reevaluations and improvements.

Use case driven – The starting point for all UML modeling is a text description of how the system interacts with its environment. This environment is typically the human end users or other information systems. This text description is then converted into a graphical description of the information systems interactions in a use case diagram.

Software Architecture Centric – UML diagrams evolve from the use cases into three general but related types of diagrams that model the system: functional, static and dynamic. The functional diagrams model the system from the end user's point of view. The static diagrams model the system from the systems unchanging view. Finally, the dynamic diagrams show how the systems changes depending on the changes in data and time.

While the proceeding principles are at first glance elegantly simple, the expression of them into actual descriptions of the system is complex. When teaching this method the instructor ultimately will use thirteen different diagrams to describe the system (Dennis, Wixom, & Tegar-den, 2005).

The structured approach to Systems Analysis and Design is analogous to the approach for building a bridge. First, there must be the basic idea for the bridge or the information system. Second, the bridge is drawn as a simple picture, or for the information system as a simple diagram. Third, the bridge picture is transformed into a series of detailed blueprints, or for the information system detailed process models and data models. Fourth, the detailed blueprints are used to construct the bridge, or for the information system, the models are used to implement the system. The structured approach uses the structure of the Systems Development Life Cycle model to give a series of

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