Chapter 16
3D GameLab:
Quest-Based Pre-Service Teacher Education

Chris Haskell
Boise State University, USA

EXECUTIVE SUMMARY

Games and gaming constructs have emerged as a tantalizing and often provocative tool for instructional delivery. Methods and pedagogy for effectively employing games, like quest-based learning, as educational tools are developing. This chapter explores the use of game-based pedagogy for a pre-service teacher education course, as well the development of a quest-based learning management system (3D GameLab) to support the class. The chapter is grounded in design-based research, and discusses four phases of development and theory generation. In each of these phases, the quest-based learning management system, course curriculum, and game-based pedagogy were subject to the same iterative process to test and generate new theory toward game-based/quest-based learning.

INTRODUCTION

The purpose of this chapter was to identify the characteristics of attractive quest-based learning activities as evidenced by learner selection and completion. Guiding questions for this study included: (1) What characteristics are common in those quests most selected by students in a quest-based learning environment? (2) What characteristics are evident in those quests that are completed?

The following methods provided the strategy for answering this and the related research questions and provided rationale for the procedures that were used. These

methods also identify the participants used in the study and their characteristics, demographics, and sample orientation. The measures and instruments used are also clearly outlined and detailed.

Case Design

This case study utilized a quantitative research design to identify the characteristics of attractive quest-based learning. This was done by employing data-mining techniques and tools SAS Enterprise Miner version 6.2 using data captured from the 3-D GameLab learning management system. Fayyad, Piatetsky-Shapiro, & Smyth (1996a) offer data mining as a process of Knowledge Discovery in Databases (KDD) through (1) data selection, (2) data cleaning, (3) data transformation, (4) data mining, and (5) results evaluation and interpretation. This process was used to find quantitative evidence.

Characteristics of this quantitative research design included descriptive statistics. These descriptive statistics guided the process of data mining. This was done to identify patterns in the data that might not be otherwise observable. Analysis was focused on a large volume of LMS interactions collected from 98 students.

The survey instrument was validated using the SPSS. Martin (2010) submits that the use of un-validated instruments or techniques in the classroom is problematic. He suggests that evidence-based pedagogy and practice are critical. This is necessary to avoid what Yates (2005) describes as "illusory correlations and fundamental computational bias." In inferential statistics, many suggest that research producing strong reliable evidence should be conducted such that a high degree of importance is placed on effect size, statistical power, confidence intervals, reliability and validity coefficients, and a randomization where possible (Horn et al., 2009 ; Shelby & Vaske, 2008, Smith, Levine, & Lachlan, 2002; Zientek, Capraro, & Capraro, 2008). However, the whole data set was collected and analyzed, an inferential measure of reducing the error were not necessary (Fayyad, Piatetsky-Shapiro, & Smyth, 1996b).

Participants and Sample

The research was conducted using four face-to-face sections of an introductory educational technology course for pre-service teachers enrolled at a university in the northwest United States. The course focused on the use of productivity and Internet tools for teachers in a classroom setting. It provided practical skills and methodological/pedagogical strategies for the implementation of word processing, presentation, spreadsheet, and Internet technologies for teaching and learning. The course was offered as one of two pre-requisites for admission to upper-division

37 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/gamelab-quest-based-pre-service/74212

Related Content

Robust Face Recognition for Data Mining
Brian C. Lovell, Shaokang Chenand Ting Shan (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition (pp. 1689-1695).*
www.irma-international.org/chapter/robust-face-recognition-data-mining/11045

Tabu Search for Variable Selection in Classification
Silvia Casado Yustaand Joaquín Pacheco Bonrostro (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition (pp. 1909-1915).*
www.irma-international.org/chapter/tabu-search-variable-selection-classification/11080

View Selection in DW and OLAP: A Theoretical Review
Alfredo Cuzzocrea (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition (pp. 2048-2055).*
www.irma-international.org/chapter/view-selection-olap/11101

Mass Informatics in Differential Proteomics
Xiang Zhang, Seza Orcun, Mourad Ouzzaniand Cheolhwan Oh (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition (pp. 1176-1181).*
www.irma-international.org/chapter/mass-informatics-differential-proteomics/10971

The Application of Data-Mining to Recommender Systems
J. Ben Schafer (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition (pp. 45-50).*
www.irma-international.org/chapter/application-data-mining-recommender-systems/10796