

Chapter 25

Validation of a Generic Educational Game Shell

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ABSTRACT

This chapter describes the process of validation of a generic educational game shell (GEGS) with the target users for whom it was created, based on the trial method known as Learner Verification and Revision (LVR). It describes the validation objectives and evaluation criteria (pedagogic and ergonomic) used to develop the measurement instruments. It also describes the methodology for a trial conducted with nine pre-service (student) teachers, finishing with the validation results and resulting revisions to the GEGS.

INTRODUCTION

The importance of taking into account the user's point of view in the creation of Internet-based learning environments has been increasingly studied (Koohang, 2004; Nielsen, 1993; Sing & Der-Thanq, 2004). Validation is a process intended to show that a procedure, technique or activity accomplishes its desired results (Thulal, 2003; Wikipédia, 2008). In the case of validation of a web environment such as a generic educational game shell (GEGS), it is a process of ensuring that the shell's results (i.e., the educational games developed by game build-

ers) will consistently correspond to their specifications as entered and will meet predetermined quality criteria. Identifying delays and difficulties encountered by game builders during the creation of an educational game, and finding solutions to them, improves the usability of the GEGS (Nogier, 2005; Usabilis, 2008). Validation, the fourth stage of the process of creating a GEGS, allows us to measure the degree of user friendliness, utility, and ease of use for its target audience (i.e., teachers) as well as whether it meets the teachers' pedagogical requirements sufficiently to be used in class or for online teaching.

This chapter first introduces the *Learner Verification and Revision (LVR)* method, which guided

DOI: 10.4018/978-1-61520-731-2.ch025

our validation process. It then describes the validation of our *Parcheesi*TM GEGS, including the formulation of validation objectives and questions, analysis factors, development of measurement instruments (used before, during, and after the trial), the quantitative and qualitative modes of analyses used, and the ethical disclosure and consent procedures. Finally, results of the trial are outlined, and recommendations for improvements to the GEGS are presented.

THE VALIDATION METHOD

The *Learner Verification and Revision (LVR)* method (Komoski, 1979; 1984), which focuses on the user, is characterized by flexibility and is well adapted to the context in which the product will be used (Nguyen et al., 2008). It allowed us to identify and correct errors and problems and to effectively validate a prototype in the course of development with a sample of the target users for whom the GEGS was created. This method, based on user trials, has also been used in game development research (Kandaswamy, Stolovitch, & Thiagarajan, 1976; Stolovitch, 1982; Thiagarajan, 1978), and for other online GEGSs (Sauvé et al., 2002; Sauve & Samson, 2004).

In this method, the three phases of the target population trial are:

- The *preparation* phase, consisting of: (1) establishing the objectives and the evaluation criteria; (2) choosing the evaluation tools; (3) writing out, testing and if necessary, revising the evaluation tools; (4) contacting and informing the target population (teachers and trainers), and (5) giving them the materials required for the trial.
- The *verification* phase, including: (1) examining and manipulating the various parts of the product, and (2) collecting the users' comments using measurement instruments before, during and after the development of

the product (an online educational game).

- The *decision* phase, consisting of (1) compiling, processing and analyzing the results; (2) making any necessary revisions, and (3) revising, if necessary, the GEGS in light of the information gathered from the users.

We describe in the following sections how this method was applied in the creation of the *Parcheesi* GEGS.

THE PARCHEESI GEGS USER TRIAL

The *Parcheesi* GEGS user trial aimed to: (1) measure the relevance and the adaptability of the game to the teachers' pedagogical requirements, and (2) measure the degree of user-friendliness, usefulness and ease of use of the online GEGS. Participants were nine pre-service teachers studying preschool and elementary education in October, 2007. This trial was intended to answer the following two questions:

1. What are the pedagogical requirements to which educational game environments must conform in order to stimulate use and development of educational games by teachers and trainers?
2. What is the degree of user-friendliness, usefulness and ease of use of the *Parcheesi* GEGS design for teachers?

Variables and Evaluation Criteria

To answer these questions, evaluation criteria were identified, as shown in Table 1. We based our choice of criteria on the recommendations of Agence Fonds social européen (2005), Bibeau et Delisle (2001), Centre de ressources Le Préau (2002), Gerhardt-Powals (1996), Kennedy, Petrovic, & Keppell (1998), Kirakowski, Claridge, & Whitehand (1998), Najjar (2001),

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