

Chapter 8.24

simSchool and the Conceptual Assessment Framework

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ABSTRACT

simSchool is a game-based simulation developed with funding from the Preparing Tomorrow's Teachers to Use Technology (PT3, 2003) program of the United States Department of Education. The simulation provides users with a training environment for developing skills such as lesson planning, differentiating instruction, classroom management, special education, and adapting teaching to multiple cognitive abilities. This chapter uses simSchool as an example to present and discuss an application of the Conceptual Assessment Framework (CAF) of Almond, Steinberg, and Mislevy (2002) as a general model for building assessments of what users learn through games and simulations. The CAF organizes the theories of teaching as well as the inferential frameworks in simSchool that are used to provide feedback to players about their levels of knowledge and abilities as teachers. The framework is generally relevant and useful for planning how to assess gains made by users while playing games or using simulations.

INTRODUCTION

An assessment is a machine for reasoning about what students know, can do, or have accomplished, based on a handful of things they say, do, or make in particular settings. (Mislevy, Steinberg, & Almond, 2003, p. 4)

Assessment is a broad concept. It encompasses small decisions such as whether to have dinner out or eat in (e.g., when we might assess our refrigerator and pocketbook) as well as larger decisions such as whether to become a rock star or an accountant (e.g., when we might assess our lifetime chance of success given our skills). Its essence is that we size up a situation by gathering data, apply some criteria to make inferences that are meaningful to us, and then decide what to do next. When assessing what someone has learned from playing a game or simulation, the same steps are taken, increasingly with automated help from networked computers.

Confusion and debate is often created, however, when the relatively straightforward process of making inferences and decisions expands to include technical issues and the politics of formal educational assessment. Questions arise about audience (who is giving and taking this assessment?), purpose (how will the results be used?), and ownership (who has the control here?), as well as about the fairness, reliability, and validity of the methods. SimSchool has its own answers to these questions. Your situation will most likely be different. This chapter cannot hope to discuss everything about assessment, but will endeavor to provide you with a framework of ideas that you can use in your setting. It will try to do this by calling attention from a detailed level of explanation of how simSchool is thinking about its challenges, to general statements that are valid for most assessments.

The audience for simSchool's assessment has two important constituents: future teachers and the professors guiding them into the profession, which in a general setting might be called users and their supervisors. There are many other possible audiences for assessment, but we do not deal with them in this chapter.

The purpose of the simSchool assessment focuses on making inferences about what the user

knows and can do as a teacher. There are other purposes of assessing games and simulations. Program assessment focuses on determining if an investment in a program is paying off. Formative assessments are used to make improvements. Opinion surveys are used to find out how people feel. And there are others. We do not address these alternative purposes.

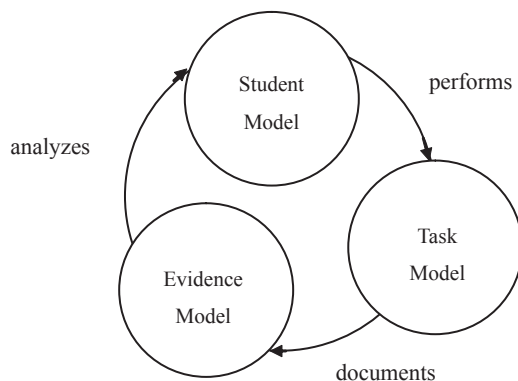
Concerning ownership, in simSchool the supervisor and user both have access to the assessment information, but the supervisor owns the data. Users see the results, hopefully analyze them, and base their future learning and action on them. But, they cannot withhold their data from the primary owner, the supervisor, who is interested in determining the extent of learning. There are many other ways to make the decision about ownership of assessment information (e.g. an institution, the public, the user), and as with the numerous options for audience and purpose, we understandably cannot deal with them in this chapter.

The plan of the chapter is to present the main concepts of an assessment framework and show in a general sense how simSchool uses the framework to organize its assessment capabilities. Undertaking both of these tasks, the chapter illustrates how games and simulations in general can assess what a user learns.

Conceptual Assessment Framework

Recent work stemming from adaptive testing (Almond, Steinberg, & Mislevy, 2002) expresses and shares a core of ideas with other research on assessment, which holds that every assessment of student learning involves three fundamental components: "a model of how students represent knowledge and develop competence in the subject domain, tasks or situations that allow one to observe students' performance, and an interpretation method for drawing inferences from the performance evidence thus obtained." (Pellegrino, Chudowsky, & Glaser, 2001, p. 2). Mislevy et al.

Figure 1. Initial components of the conceptual assessment framework



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