



## **Chapter XVIII**

# **Shaping the Research Agenda with Cyber Research Assistants**

Lyn Henderson, James Cook University, Australia

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### **Abstract**

*Games and simulations in online learning are energizing development in learning and teaching and therefore of great interest to the research community. This chapter reflects on a few of the innovative methods currently in use to capture and report user data for education assessment and sets out new ideas for shaping the research agenda as applications become more capable of effective high level analysis of qualitative simulation and game data. Three areas are briefly explored. Cyber research assistants are defined and their achievements explored. Issues such as longitudinal studies, transference, and international collaboration are discussed. Finally, ethical considerations are raised. A case is outlined for students and teachers in various contexts to have access to the returned data in order to take ownership of subsequent learning and teaching actions. The chapter concludes with a call for the integration of teachers, students, researchers, governments, granting bodies, and computer scientists as important players in the research conversation. The chapter aims to describe the shape of an education research agenda targeting students playing online games and simulations in classrooms from kindergarten through higher education levels.*

## Introduction

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Games and simulations in online learning are energizing developments in learning and teaching and therefore of great interest to the research community. Innovative methods using intelligent agents constructed through complex programming are currently in use to capture and report online simulation and game data for education assessment purposes (e.g., Gibson, 2003; Stevens, Johnson, & Soller, 2005). Although online intelligent agents collect valuable data for researchers, the computerized methods are currently inadequate, on two major counts. One is that they typically target games and simulations in the sciences and math with few directed at the social sciences and creative arts. The other is that the intelligent agents are not yet capable of effective high level analysis of qualitative simulation and game data that involve audio input from students and ascertaining students' thoughts at the time they are choosing strategies or answers. Shaping the research agenda involves solving these and other possibilities. The goal, as always, is to enhance teaching and learning outcomes.

Imagine how enriched researchers' interpretations will be if we can find non-intrusive electronic ways to capture what individual student players are actually thinking as they carry out their game strategies online or as their ideas and strategy planning are discussed with a partner, or partners, sitting beside them or in another country. Imagine online qualitative tools that not only collate and satisfactorily analyze such verbal and text discussion but also do this through triangulation of the results with the other variously mined data. Also imagine if the intelligent agents gathered and reported all this for each individual across various disciplines in order to explore Gardiner's (1999) multiple intelligences at work. Furthermore, it takes time for students to accomplish mastery of increasingly complex skills and remediate their weaknesses. Visualize collecting data as to whether higher order thinking skills, strategies, and processes developed during game and simulation play are transferred to problem solving in the same and different disciplines without, and with, other computerized games and simulations. Next, envisage obtaining electronic longitudinal data for each student and groups of students from one year to the next and the next on more than their overall government and school mandated achievement scores. Such data would be an invaluable teacher, educational designer, programmer, institutional, policy, and researcher tool.

Such innovations will allow researchers, academics, computer scientists, teachers, and students to be students to be part of the conversation about how to support and improve the students' thinking processes and strategies, collaborative and team skills, short and long term outcomes, motivation, transference, and perseverance with learning. The overarching goals would be to promote each student's ability to take on the attitudes and strategies of a life long learner and for the teacher to accomplish this by individual strategic scaffolding. This is the eClassroom vision for the cyber research agenda.

In the course of developing this vision, the chapter does not provide full descriptions of technical terminology and programs in which current and future intelligent agents carry out learner assessments in educational Web environments. Readers will find this background in the previous chapters as well as in the references provided. Three areas of shaping the cyber research agenda are singled out for attention.

The first outlines current cyber research assistant achievements after a brief sojourn to define cyber research assistants. The second focus presents new directions for cyber and human researchers. Issues such as longitudinal studies and transference are targeted, as is

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