Chapter 8

An Inquiry-Based Approach to Blended and Online Learning in K–12 Education

Norman Vaughan
Mount Royal University, Canada

ABSTRACT

The purpose of this chapter is to demonstrate how Garrison, Anderson, and Archer’s (2001) Practical Inquiry model can be used to create effective blended and online learning experiences in a K to 12 education context. The chapter begins with an introduction to inquiry-based learning followed by design strategies and examples of how digital technologies can be used to successfully integrate synchronous and asynchronous opportunities for learning in blended and online courses.

INTRODUCTION

Inquiry-based learning has been described in a variety of forms and contexts (Bruner, 1961; Dewey, 1997; Vygotsky, 1962). Alberta Education (2004) defines this approach to learning as a “process where students are involved in their learning, formulate questions, investigate widely and then build new understandings, meanings and knowledge. That knowledge is new to the students and may be used to answer a question, to develop a solution or to support a position or point of view. The knowledge is usually presented to others and may result in some sort of action” (p. 3). The Galileo Educational Network (2014) adds that inquiry-based learning is the “study into a worthy question, issue, problem or idea. It is the authentic, real work that that someone in the community might tackle. It is the type of work that those working in the disciplines actually undertake to create or build knowledge” (para. 3.). The University of Calgary’s (2003) institutional learning plan states that inquiry-based learning is “problem or question driven, typically has a small-group feature, includes critical discourse, is frequently multi-disciplinary, and incorporates research methods such as information gathering and synthesis of ideas” (p.4).

Over the years there has been an ongoing debate about the role of inquiry-based learning in kindergarten to grade 12 education, especially at it relates to blended and online learning environments.

DOI: 10.4018/978-1-5225-0507-5.ch008
Canada’s province of Alberta recently announced curriculum redesign plans to focus on an inquiry-based approach to learning (Alberta Education, 2014). These redesign plans were met with a diverse range of responses. Some parent groups created petitions and organized protests at the Alberta Legislature specifically with regards to the math curriculum claiming “the new, inquiry-based approach to math is leaving kids confused and unable to grasp basic math concepts” (CBC News, 2014, para. 3.). Conversely, others have stated the importance of this curriculum reform “to meet the demands of our fast-changing, technology-driven world. In our global community, we need to prepare students for a future that demands they be critical thinkers, creative problem-solvers, and excellent communicators” (Calgary Board of Education, 2014, para. 3).

This discussion about the value of inquiry-based learning also took place throughout the 20th century. During the American-Russian space race of the late 1950s and early 1960s there was heated debate about the focus of the United States science curriculum. Many felt that a national curriculum with standardized testing was the solution to improving students’ scientific competencies while Schwab (1962) argued that knowledge does not rest on facts or isolated skills but on principles of inquiry. He demonstrated that “learning a discipline implies coming to understand not only its substantive structure (i.e., facts, concepts, theories), but also its syntax—that is, the questions that guide inquiry, the tools that allow inferences and interconnections, and the actions and principles (rules) that validate knowledge” (Schwab, 1962, p.4).

Going further back in time, Dewey (1997) also wrote about the importance and the role of inquiry in relationship to experiential learning. His famous quote “(i) f we teach today’s students as we taught yesterday’s, we rob them of tomorrow” (Dewey, 1916, p.167) still resonates today. In addition, Dewey (1916) emphasized the importance of a community approach to inquiry-based learning in his book entitled Democracy in Education and Lipman (1991) coined the term “community of inquiry” to describe a methodology for teaching critical thinking through a social and communal process. Ramsden (1988) indicates that “a community of inquiry provides the environment in which students can take responsibility and control of their learning through negotiating meaning, diagnosing misconceptions, and challenging accepted beliefs – essential ingredients for deep and meaningful learning outcomes” (as cited in Garrison & Anderson, 2003, p.27).

Garrison, Anderson, and Archer (2000) created a community of inquiry model as a conceptual framework to identify the elements that are crucial pre-requisites for a successful higher educational experience within a computer mediated conferencing environment. The authors indicate this model can be applied to all educational experiences and thus, the potential exists to use this framework in K to 12 blended and online educational contexts. Figure 1 illustrates the three core elements of this framework: a social, teaching, and cognitive presence.

The sphere of social presence refers to the “ability of participants in a community of inquiry to project themselves socially and emotionally as ‘real’ people (i.e., their full personality), through the medium of communication being used” (Garrison et al., 2000, p. 94). The element of teaching presence includes the “design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes” (Anderson, Rourke, Garrison & Archer, 2001, p.1). Cognitive presence is “the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry” (Garrison, Anderson & Archer, 2001, p.11).

In addition, Garrison et al. (2001) have developed a Practical Inquiry Model (PI) to guide the development of cognitive presence within an educational experience. The four phases of cognitive presence represented in this model are illustrated in Table 1.
Related Content

Non-Cognitive Factor Relationships to Hybrid Doctoral Student Self-Efficacy
Jessica Dalby Egbert, Frank Gomez, Wenling Li and Sandra L. Pennington (2015). *International Journal of Web-Based Learning and Teaching Technologies* (pp. 1-13).
[www.igi-global.com/article/non-cognitive-factor-relationships-to-hybrid-doctoral-student-self-efficacy/123158?camid=4v1a](www.igi-global.com/article/non-cognitive-factor-relationships-to-hybrid-doctoral-student-self-efficacy/123158?camid=4v1a)

Podcasts as Learner-Created Content in Higher Education
[www.igi-global.com/chapter/podcasts-learner-created-content-higher/76734?camid=4v1a](www.igi-global.com/chapter/podcasts-learner-created-content-higher/76734?camid=4v1a)

An Agent-Based Framework for Personalized E-Learning Services
[www.igi-global.com/article/agent-based-framework-personalized-learning/2990?camid=4v1a](www.igi-global.com/article/agent-based-framework-personalized-learning/2990?camid=4v1a)

The Role of Learner in an Online Community of Inquiry: Responding to the Challenges of First-Time Online Learners
[www.igi-global.com/chapter/role-learner-online-community-inquiry/29638?camid=4v1a](www.igi-global.com/chapter/role-learner-online-community-inquiry/29638?camid=4v1a)