Chapter 9
Innovation in Learning:
Innovative Tools and Techniques for Learning

İbrahim Arpacı
Middle East Technical University, Turkey

Tarkan Gürbüz
Middle East Technical University, Turkey

ABSTRACT

Innovation is a key for the growth, productivity, competitiveness, survival, and profitability in the today's competitive world. This paper examines the relevant aspects of literature on invention and innovation concepts, including characteristics of innovation, types of innovation, diffusion of innovation, innovation process, types of innovators, importance of innovation, tools and techniques for innovation. This study forms an extensive review of relevant academic literature through continuous iterative and comprehensive literature study to develop a conceptual framework. Consequently, tools and techniques to generate new ideas for innovation are explored and, to improve learning, how these innovative tools and techniques can be used in educational settings is explained.

INTRODUCTION

The word innovation stems from the Latin word "innovare" which means to "renew". In this context, innovation is defined as ideas, formulas, programs or technologies, which the organization in question regards as new (Evan, 1993; Beatty & Gordon, 1991). Schumpeter (1939) defined innovation as the setting up of a new production function, which can take the form of a new commodity or product innovation, a new service, a new market, or a new production process. However, innovation is more than a good idea, a new service or product. Innovations need to change conditions in society and must alter the organizational performance in a positive manner. In the case of business organizations, innovations should enhance the organizations business performance and provide a source of competitive advantage (Soosay & Hyland, 2005). The value of innova-

DOI: 10.4018/978-1-4666-2053-7.ch009

tion lies in its contribution to profit or addition to economic value (Goswami & Mathew, 2005).

By the end of the 1980s the knowledge-based economy, globalization and the pressure of international competition had increased the importance of innovation (Camagni, 1995; Malmberg, 1997; Ritsila, 1999). There is growing recognition on the importance of knowledge management for innovation (Gürbüz, 2008). Innovation is widely accepted as a key to creating and sustaining a competitive advantage. Creating breakthrough innovations is a key strategy for many companies in an increasingly tight competition (Terninko et al., 1998). From total quality management (TQM) in the 1980s, through reengineering in the 1990s, and Six Sigma today, new philosophies and methods are constantly being invented to meet new competitive challenges. Innovation has become a driving force and leading executive level mantra for a large number of organizations around the world as the global economy evolves (Salz, 2006). Enterprise process innovation (EPI), in particular, is a widely recognized source of competitive advantage (Matthyssens et al., 2006). Innovation is considered a fundamental component of entrepreneurship and a key element of business prosperity (Nonaka & Takeuchi, 1995).

In recent years, predominant source of sustainable competitive advantage has shifted from a static, defensible process or patent novelty, to an organization's dynamic capability to innovate continuously (IBM, 2006). Today's global economy requires that firms develop what is referred to as "dynamic capability" (Zollo & Winter, 2002). This includes a range of competencies, including the ability to acquire and assimilate knowledge, the ability to create a culture of innovation and experimentation, the ability to meet customer needs and address rapidly changing market conditions, and the ability constantly to re-invent internal processes (Duening, 2007).

Technological innovation represents an important source of global competitive advantage in today's technologically intensive competitive markets. To compete in today's, companies must create new products, services and processes and they must also adopt innovation as a way of corporate life (Tushman & Nadler, 1986). Technological innovations in a firm help it respond quickly to new product offerings and shorten product development time. As technological competition intensifies, it becomes more and more important as the firms recognize, protect, and reinforce their technological capabilities as the sources of global competitive advantage (Guan & Liu, 2007). Technological innovativeness plays an important role in developed economies, it is also important in the revitalization of transition economies since it is the driving force behind the process of restructuring and catching up (Gunther & Gebhardt, 2005).

Innovation is essential not only for organizations but also for educational institutions. Effective learning environments depend on the creation and fostering of an environment that encourages innovation and application of new technologies. Advances in technology, indeed offers opportunities for creating powerful collaborative learning environments (Gürbüz, 2007). Innovative activity underpins productivity and efficiency. The following section analyzes examines the relevant aspects of literature on invention and innovation concepts and methodologies, tools and techniques for innovation that are crucial to design innovative learning environments.

NEW IDEA, INVENTION AND INNOVATION

Innovation is the implementation of a new or significantly improved product, service, process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. The minimum requirement for an innovation is that the product, process,