Chapter 1
Technology Integration in Work Settings

Ashwini Esther Joshua-Gojer
University of North Texas, USA

Jeff M. Allen
University of North Texas, USA

Mariya Gavrilova-Aguilar
University of North Texas, USA

ABSTRACT

Technology integration is gaining preeminence in the workplace. While plentiful definitions exist, researchers have attempted to answer many questions related to technology. Most of the issues dealing with technology in the workplace address, but are not limited to, technological entry, technological adoption, technological adaptation, technological appropriation, and technological invention. This chapter delves into the concept of technology integration in work settings. Starting with definitions, the chapter examines the nature of technology, its interrelationship with knowledge and the learning organization, its importance in the workplace, and its association with innovation.

WHAT IS TECHNOLOGY INTEGRATION

'Technology' has become a commonplace word. But what exactly is technology? How is technology integrated in work settings? What different types of technology exist? How does technology tie in with knowledge and the learning organization? Is there a philosophy of technology that affects the workplace? How are technology and innovation related? This chapter attempts to answer these questions in an effort to integrate prior research and provide practical implications for the workplace.

History of Technology

Definitions of technology have been vague and rife with confusion. There is no single globally accepted definition of technology. Misa (2009) notes that for many years historians have refrained

from giving a prescriptive definition of the term 'technology'. It is not possible to talk about technology without understanding what it is and what it does (Barney, 2000). According to Lake (2002), lack of understanding ails technology. Technology is formed by the combination of the Greek words techne and logos (Lake, 2002). Techne (art or skill) refers to the professions and fields that produce devices we see as technological. Logos is the logical discussion or reasoning that accompanies techne. Hughes, a noted historian of technology, states that "defining technology in its complexity is as difficult as grasping the essence of politics. Few experienced politicians and political scientists attempt to define politics. Few experienced practitioners, historians, and social scientists try to inclusively define technology" (2004, p. 2). The term 'technology' itself is fairly recent. Recent research has productively treated the term as an emergent and contested entity (Misa, 2009). As cited by Misa (2009), Jacob Bigelow, a medical doctor and Harvard professor, is often credited with coining the term in his 1829 book Elements of Technology. Prior to that, the term was almost always used to describe various technical crafts as opposed to the 'application of science' Bigelow referenced.

Definition of Technology

The vast number of definitions of technology demonstrates its different perspectives. Naughton (1994) defines technology as "the application of scientific and other knowledge to practical tasks by organizations that involve people and machines" (p. 12). Allen and Wircenski (1998) define technology in the context of education and training as "the utilization of theory, processes, information, and materials to improve the knowledge, skills and attitudes of a society" (p. 36). White and Bruton (2011) define technology as "the practical implementation of learning and knowledge

by individuals and organizations to aid human endeavor. Technology is the knowledge, products, processes, tools and systems used in the creation of goods or in the provision of services" (p. 15).

According to White and Bruton (2011), a few major definitions include the following perspectives on technology:

- "The processes used to change inputs into outputs;
- The application of knowledge to perform work;
- The theoretical and practical knowledge, skills, and artifacts that can be used to develop products as well as their production and delivery system;
- The technical means people use to improve their surroundings;
- The application of science, especially to industrial or commercial objectives; the entire body of methods and materials used to achieve such objectives." (p. 15)

The aforementioned definitions share common elements. First, all three definitions imply that there is a process involved in technology. Second, they imply that change is an outcome of technology. Third, they indicate that technology involves a systematic approach to deliver the desired outcomes (White & Bruton, 2011). Last, but not least, these definitions refer to the human element – that people are involved in the process of harnessing knowledge, theory, and information to aid individuals, organizations, and society at large.

According to Spector and Wang (2002), technology includes methods and techniques as well as tools and equipment. They postulated that "a broad interpretation of technology is vital to the development of a scientifically sound and socially progressive perspective with regard to technology integration" (Spector & Wang, 2002, p. 3). In his book Technology in Schools, Naughton (1986)

Related Content

The Business Conversation- Where We're Going
Stephen J. Andriole (2005). *The 2nd Digital Revolution (pp. 53-83).*
www.irma-international.org/chapter/business-conversation-going/30277

Diversity Leadership Development for Cybersecurity Managers in Healthcare Organizations
Darrell Norman Burrell, Amalisha Sabie Aridiand Calvin Nobles (2023). *Handbook of Research on Cybersecurity Risk in Contemporary Business Systems (pp. 240-254).*
www.irma-international.org/chapter/diversity-leadership-development-for-cybersecurity-managers-in-healthcare-organizations/321021

Deployment of Information Technology Governance Using Architectural Framework
Nomathamsanqa (Thami) Rachel Batyashe (2021). *Empowering Businesses With Collaborative Enterprise Architecture Frameworks (pp. 199-215).*
www.irma-international.org/chapter/deployment-of-information-technology-governance-using-architectural-framework/260005

Creating Business Value through E-Commerce
Jatinder N.D. Guptaand Sushil K. Sharma (2003). *Creating Business Value with Information Technology: Challenges and Solutions (pp. 166-186).*
www.irma-international.org/chapter/creating-business-value-through-commerce/7199

Information Technology and Firm Innovations: A Review and Extension Explicating the Role of Networks, Capabilities, and Commercialization of Innovation
Avimanyu Datta (2013). *Business Innovation, Development, and Advancement in the Digital Economy (pp. 188-206).*
www.irma-international.org/chapter/information-technology-firm-innovations/74145