Chapter 103
Analyzing the IS 2010 Model Curriculum for Evidence of the Systems Approach

George Schell
University of North Carolina Wilmington, USA

Richard Mathieu
Queens University, USA

ABSTRACT

The systems approach is frequently associated with solving large-scale, complex problems and is regarded as a foundation for systems engineering and decision-making. Components of the systems approach are too frequently missing from information systems programs in business schools. The purpose of this paper is to determine the degree to which the IS 2010: Curriculum Guidelines for Undergraduate Degree Programs contains the systems approach in its learning objectives as well as specific course content. By examining the curriculum guidelines a preliminary judgment can be made concerning evidence of the systems approach having a broad implementation across information systems programs. The paper concludes with a discussion of the importance of the systems approach in the IS curriculum and establishing the systems approach as a theme in the curriculum of IS programs.

INTRODUCTION

Views on systems thinking as they pertain to business problems were well defined by Gharajedaghi (Gharajedaghi, 2011). His second chapter introduces openness, multidimensionality, emergent properties, and counterintuitive behavior as principles upon which to focus our thought on systems and a holistic approach to the components of and interaction between the components of those systems. Systems thinking, as opposed to artifacts, is arguably the central concept behind an information systems curriculum in business schools (Alter, 2003 and Alter, 2008). The principles proposed by Gharajedaghi bring that focus to systems thinking.

DOI: 10.4018/978-1-5225-1837-2.ch103

In this paper, we define the systems approach based upon the knowledge area 'Systems Approach Applied to Engineered Systems' found in The Systems Engineering Body of Knowledge v. 1.4 (BKCASE Editorial Board, 2015). In this context, the systems approach is a "comprehensive problem identification and resolution approach based upon the principles, concepts, and tools of systems thinking and systems science, along with the concepts inherent in engineering problem-solving" (Jackson et al., 2010). This approach to problem solving can be applied in areas besides engineering. For example, Mitroff (1998) presents a framework for managers and policy makers that identifies key elements of successful problem-solving (precisely solving a problem but solving the wrong problem, expanding your options, expanding the boundaries of problems and managing problems from multiple perspectives) that are key elements of the systems approach applied to engineered systems.

It is important to define the scope of the system being investigated since it focuses the discussion of specifics and not on generalities that are better described as philosophies rather than applications. We want to see how the curriculum guidelines impact the stakeholders of the curriculum. Open systems interact with the stakeholders in the environment. For an information systems degree in a business school those stakeholders should include students, faculty in the IS discipline, colleagues outside the IS discipline, administrators, and the business community.

The information systems discipline is well situated to use systems thinking for problem solving. Note that problem solving tends to deal with measurable characteristics. It can be approached both from the point of view of hard or soft systems thinking according to Jackson (2003). The notion of "systems thinking" used in this article refers to what many refer to as "hard" systems thinking".

It can be alluring to become immersed in the technology of information systems (the artifact) since that area is growing and changing so quickly. We constantly find new tools to use or a tool improvement that impacts the environment of information system majors. Although there has been spirited debate (Alter, 2004; Benbasat & Zmud, 2003; Gutherie, 2003; Meyers, 2003), the information systems major is about systems and not the artifacts. A systems approach to problem solving – especially when the solution involves data, information, and/or technology – is a discipline that will be well understood and accepted by all of the stakeholders for the information systems degree.

The importance of remaining focused on the core concept of the discipline has been communicated by many people. But two seminal quotes seem especially applicable to our discipline. When Russell Ackoff addressed the infatuation with computers by those in the management science field he said "Enthusiasm for such systems is understandable: it involves the researcher in a romantic relationship with the most glamorous instrument of our time, the computer. Such enthusiasm is understandable but, nevertheless, some of the excesses to which it has led are not excusable (Ackoff, 1967)."

Dijkstra (Dijkstra, 1986) explained it this way when he described his disapproval of the phrase 'computer science' saying that "actually, *[sic]* is like referring to surgery as 'knife science' – and it was firmly implanted in people's minds that computing science is about machines and their peripheral equipment." Let us not make that mistake with the discipline of information systems.

THE SYSTEMS APPROACH

The systems approach is a methodology for solving problems associated with large, complex systems. The systems approach to problem solving (sometimes referred to as 'systems analysis') is a foundational framework in systems engineering (Hall, 1968; Bahill and Gissing, 1998; Gibson et al., 2007; Mora et