Telecommunications Courses in Information Systems Programs

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ABSTRACT

This paper reports on an investigation of how undergraduate information systems (IS) programs include telecommunications courses in their curricula. The curricula of a random sample of undergraduate IS programs were examined. The results indicate that telecommunications typically is not an area of emphasis; most IS programs require only one telecommunications course and less than half provide an additional course beyond that. The number and types of required versus elective telecommunications courses included in IS curricula are presented. The results also show that programs identified as IS majors tend to do a better job of including telecommunications courses in their curricula than programs designated as IS concentrations. Implications of the results and questions for further research are discussed.

Keywords: curriculum design; data communication system; education; IS curriculum; networking; telecommunications

INTRODUCTION

Business information systems (IS) programs vary considerably in the way that telecommunications[1] issues are included in their curricula. Telecommunications typically is not a significant component of IS curricula, with the main emphasis usually being placed on systems development subjects such as programming, database, and systems analysis. Of the 10 courses included in the IS 2002 model curriculum for instance (IS2002, 2002), only one is devoted specifically to telecommunications while one other provides a background in computer and networking hardware and operating systems as a prerequisite to the telecommunications course.

This may be understandable given that many IS graduates start out in entry-level application development positions and see this as their initial career path. Additionally, employers that hire graduates of

undergraduate IS programs typically place them into entry-level application development and support positions.

A recent survey of 60 companies indicates the importance of data communications knowledge for job categories besides networking (Wilkins & Noll, 2000). Although never in the top three or four most important skills, this study showed that having a good background in data communications/networking was considered to be of mid-level of importance for occupations such as programmer, systems analyst, and end user support. Assuming this view of telecommunication's importance is widespread, it would help to explain why the IS2002 model curriculum provides only one telecommunications course. This course may be intended more to provide background skills and knowledge that help IS professionals function in a networked environment rather than being an area of emphasis in the IS curriculum.

Besides providing background skills and knowledge in a supporting technical field, telecommunications-related courses could provide some preparation for employment in this area. Although telecommunications is probably not the career envisioned by most IS students, it is one with increasing employment opportunities. In discussing the future of American programmers, Mander (2001) notes that there is an undoubted skills shortage in the area of computer networking as this technology has increased in strategic importance during the 1990s. A study conducted in the late 1990s indicated that significant demand existed for IT graduates with skills in telecommunications and infrastructure support (Gonzenbach, 1998).

More recent data provided by report from the Bureau of Labor Statistics (2004) on employment growth in about 800 hundred occupations from 2002-2012 shows that this trend should continue. Two of the networking-related occupations defined by the Bureau of Labor, "Network and Computer Systems Administrators" and "Network Systems and Data Communications Analysts", were among the 30 expected to grow the fastest from 2002 to 2012, with predicted growth rates of 37% and 57%, respectively. "Network Systems and Data Communications Analysts" in fact is predicted to be the second fastest growing occupation in the United States during this period. Total 2012 employment for "Network and Computer Systems Administrators" and "Network Systems and Data Communications Analysts" is expected to be 345,000 and 292,000 respectively. Thus, there should continue to be good employment opportunities in this field for the foreseeable future.

Although there has been a description of specific telecommunications courses included in one IS program (Minch & Tabor 2003) and of telecommunications curricula in other disciplines (Shariat & Benjamin 1999; Thompson 2003), our research discovered little academic literature devoted to an examination of how telecommunications courses are included in IS curricula across a sample of universities. One study that addresses this issue to some extent (Gambill & Maier, 1998) showed that 78% of IS programs offered a single data communications course, and only 38% of the programs included it as a requirement. It is not clear, however, how well these figures describe the current situation.

The purpose of this study is to report on how telecommunications courses are included in the curricula in IS programs. How many courses are typically required?

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