Chapter XIV
A Hybrid and Novel Approach to Teaching Computer Programming in MIS Curriculum

Albert D. Ritzhaupt
University of North Florida, USA

T. Grandon Gill
University of South Florida, USA

ABSTRACT

This chapter first discusses the opportunities and challenges of computer programming instruction for management information systems (MIS) curriculum, which includes the development of survey instruments and the meaningful integration of information and communication technology. Second, the chapter describes a unique and hybrid computer programming course for MIS curriculum that embraces an assignment-centric design, self-paced assignment delivery, low involvement multimedia tracing instructional objectives, and online synchronous and asynchronous communication. Third, the development and use of a survey is employed as a method to monitor and evaluate the course, while providing an informative discussion with descriptive statistics related to the course design and practice of computer programming instruction. Tests of significance show no differences on overall student performance or satisfaction using this instructional approach by gender, prior programming experiences, or work status. This chapter aims to provide generalizable knowledge to influence the practice in computer programming instruction in MIS curriculum.

INTRODUCTION

Graduates of management information systems (MIS) programs should possess a variety of organizational and technical skills, including a strong foundation in computer programming. While a majority (78%) of 1,250 information technology managers surveyed in a large national study suggested full-time study as the most effective way to gain the necessary skills and knowledge, only 20% of this same group reported that undergraduates were "equipped for work" (Brandon, Pruett, &

Wade, 2002). Research sponsored by the National Science Foundation (NSF) has reported that the U.S. has an inability to generate well-prepared new graduates in the information systems-centric disciplines (Lidtke, Stokes, Haines & Mulder, 1999). The study found that graduates lack computer programming knowledge and skills necessary to succeed in business and industry. These reports are of paramount concern to MIS educators and a signal to improve the quality of instruction in our programs.

To heighten the quality of instruction, educators place emphasis on the development and dissemination of best practices that intersect pedagogy, content domain, and information and communication technology (ICT) for instruction. Publication venues like the *Journal of Information Systems Education* or the *Journal of Information Technology Education* collect and share experiences about pedagogy in information-centric programs. These best practices are, perhaps, the necessary elements to equip our educators, and consequently, our graduates to compete in a global economy. This shared value highlights the importance of a *Handbook of Distance Learning for Real-Time and Asynchronous Information Technology Education*.

In the spirit of this important tradition, this chapter addresses the concerns by: 1) providing a rich description of the pedagogical context used in a novel, hybrid computer programming course in an MIS curriculum; 2) providing empirical evidence that demonstrates the instructional value of those elements found within this course; and 3) providing reliable and valid evidence of an instrument designed to monitor this course. The chapter first briefly examines the challenges and opportunities of teaching computer programming in MIS curriculum, and then examines the specific course under investigation. This chapter aims to provide generalizable knowledge to influence the practice in computer programming instruction in MIS curriculum.

The Challenges

Computer programming instruction in MIS curriculum poses many serious problems to educators, starting with the inherent difficulty of the content domain. Computer programming students have to learn to analyze problems critically, implement robust solutions in a programming language, debug code, and make enhancements to existing computer programs, and repeat this process several times in multiple programming assignments over the duration of a quarter or semester. All of this must be done while learning programming concepts, a programming language, and principles of software design. There is little surprise students are often challenged by one or more aspects of a computer programming course.

Empirical studies confirm that students struggle with computer programming. The most troubling numbers are from the introductory computer programming courses where failure and withdrawal rates exceed 50% (Woszczynski, Guthrie, & Shade, 2005). One study found that the probability of passing an introductory undergraduate programming course the first time was 40% across all majors, with an initial failure rate of 19.5% and a withdrawal rate of 40.5% (Beise, Myers, VanBrackle, & Chevli-Saroq, 2003). During a period of high enrollment growth, this may not have been such a problem. However, during a period of low enrollment, this problem can threaten the sustainability of an academic program.

Graduates of MIS programs are required to possess a strong foundation in computer programming. Yet, research suggests the degree of interest in learning computer programming is highly variable in MIS curriculum because many graduates pursue careers in the field where computer programming is not a required job activity (Gill, 2005a). In opposition to degree programs like computer science, with a more computer programming focused curriculum, MIS students may only be exposed to a single programming course in their entire program of study.

Related Content

Back to the Future: Tracing the Roots and Learning Affordances of Social Software
Nada Dabbaghand Rick Reo (2011). *Web 2.0-Based E-Learning: Applying Social Informatics for Tertiary Teaching (pp. 1-20).*
www.irma-international.org/chapter/back-future-tracing-roots-learning/45014

Web-Based Collaboration and Decision Making Support: A Multi-Disciplinary Approach
Nikos Karacapilidisand Manolis Tzagarakis (2010). *Web-Based Education: Concepts, Methodologies, Tools and Applications (pp. 1460-1471).*
www.irma-international.org/chapter/web-based-collaboration-decision-making/41425

Cooperative Learning and ICT
Nicoletta Sala (2006). *Teaching in the Knowledge Society: New Skills and Instruments for Teachers (pp. 187-204).*
www.irma-international.org/chapter/cooperative-learning-ict/30078

The Impact of Web 2.0 Technologies on the Learning Experience of Students in Higher Education: A Review
Afaf Mubarak Bugawaand Andri Mirzal (2018). *International Journal of Web-Based Learning and Teaching Technologies (pp. 1-17).*
www.irma-international.org/article/the-impact-of-web-20-technologies-on-the-learning-experience-of-students-in-higher-education/205548

Achieving Rural Teachers' Development Through a WeChat Professional Learning Community: Two Cases From Guangdong Province
Xue Zheng, Haixia Liu, Dongmei Linand Jiacheng Li (2018). *Digital Transformation and Innovation in Chinese Education (pp. 307-318).*
www.irma-international.org/chapter/achieving-rural-teachers-development-through-a-wechat-professional-learning-community/188065