Journal of Information Systems Education

Volume 30
Issue 4
Fall 2019

Invited Paper

The Changing Landscape of IS Education: An Introduction to the Special Issue

Lee A. Freeman and Nolan Taylor

Recommended Citation: Freeman, L. A. & Taylor, N. (2019). Invited Paper: The Changing Landscape of IS Education: An Introduction to the Special Issue. *Journal of Information Systems Education,* 30(4), 212-216.

Article Link: http://jise.org/Volume30/n4/JISEv30n4p212.html

Initial Submission:	3 May 2019
Accepted:	8 October 2019
Abstract Posted Online:	n/a
Published:	12 December 2019

ISSN: 2574-3872 (Online) 1055-3096 (Print)

The Changing Landscape of IS Education: An Introduction to the Special Issue

Lee A. Freeman
College of Business
University of Michigan-Dearborn
Dearborn, MI 48126, USA
lefreema@umich.edu

Nolan Taylor
Kelley School of Business
Indiana University-Indianapolis
Indianapolis, IN 46202, USA
notaylor@iupui.edu

ABSTRACT

The last 30 years of information systems advancements and implementations within organizations saw amazing growth in computing power, interconnectivity, and analytical techniques. Simultaneously, information systems education has changed and adapted to these new organizational systems. The *Journal of Information Systems Education* (JISE) published its first article in 1989. To commemorate 30 years of JISE, we are excited and proud to present this Special Issue titled "The Changing Landscape of IS Education." The primary themes of the 12 articles within the special issue are: retrospectives, improving pedagogy, program design and curricular models, the CIS/MIS/IS discipline, and strategic issues for the future.

Keywords: Pedagogy, Change, IS Education, Curriculum design & development, IS programs, Model curricula

1. INTRODUCTION

It is an understatement to say that the current landscape of organizational information systems is a far cry from the landscape of 30 years ago. The same can be said for the topics covered and methods used to teach information systems at the university level. The pioneer IS programs wrestled with finding the right balance between technical and business content. Thirty years later, these ideal portfolios must not only consider changes in technology, but also changes in both the business environment and in the students themselves. Online delivery, data analytics, and artificial intelligence are just a few of the new variables in the equation.

As technology continues to change at a rapid pace – social media, Internet of Things, blockchain, etc. – and organizations of all types, sizes, and industries adapt, the world's educational institutions must adapt as well. While undergraduate (Nunamaker, Cougar, and Davis, 1982; Davis et al., 1997; Gorgone et al., 2002; Topi et al., 2010) and graduate curriculum models (Gorgone et al., 2000; Gorgone et al., 2006; Topi et al., 2017) are updated over time through collaborations among numerous global societies, these models are focused primarily on what instructors should teach, what students should know, and/or what industry needs are driving curricula, and they are limited by the number of courses offered in the respective degree programs. These models rarely touch on issues such as pedagogy, instructional design, instructional tools, global issues impacting education, or untapped opportunities.

The *Journal of Information Systems Education* (JISE) published its first article in 1989. To commemorate 30 years of JISE, we are excited and proud to present this Special Issue titled "The Changing Landscape of IS Education." Invitations to submit an article for this special issue were sent to a select group of individuals based on their role in professional societies, pedagogical leadership, academic administration, and editorial activities. Potential topics for this special issue of JISE included, but were not limited to:

- How is IS education different now than 20/30/40 years ago?
- What can IS education learn from other disciplines?
- What role should [organization or association] have in shaping the future of IS education?
- What is the future of IS pedagogical research and publication?
- How does IS education fit within a liberal arts college/university?
- What disruptive pedagogies impact IS education?

- What role do schools of technology, schools of information, and other such academic programs play in the future of IS education?
- What is the role of agile teaching and learning in the IS curriculum?
- What do we consider to be our reference disciplines?
- What do university administrators (deans, provosts, presidents) need to know about IS education?
- What are the untapped opportunities for IS education?

The rest of this introductory article is organized as follows: The next section provides context for the special issue. The following section introduces the papers in the special issue. The final section looks to the future with our own opinions.

2. LOOKING BACK

The last 30 years of information systems advancements and implementations within organizations saw amazing growth in computing power, interconnectivity, and analytical techniques. Simultaneously, information systems education has changed and adapted to these new organizational systems. To look back at information systems utilization and information systems education 30 years ago, one has to remember what the world was like in 1989. The Cold War had just ended, the Apple Mac and Mark Zuckerberg were only five years old, and the World Wide Web concept was just being formally introduced to the world by inventor Tim Berners-Lee. The Windows operating system, Amazon, Google, and commercial GPS use were still years away. Most of us didn't have an email account, we may have owned a personal computer, and we paid by the minute for long distance telephone calls. Organizations relied on mainframes, batch processing, and dot-matrix printouts, and many large retailers still operated printed mail order catalogs.

The first few volumes of JISE included articles focused on topics such as software piracy, the preferred programming language for degree programs, and curricular guidance on teaching the database course. Authors were also looking at accreditation, ethics, and team projects. Over time, JISE articles began including more pedagogical studies regarding instructional design choices and teaching approaches, but programming and database remained core topics. However, as can be seen on the themed pages for programming (http://jise.org/programming.html) and database/data modeling (http://jise.org/database.html), the last decade has seen a decline in the number of articles in these two areas. Of late, enterprise resource planning (ERP), systems analysis and design (SAD), data analytics/business intelligence, and security/cybersecurity have become much more popular.

This special issue represents an important part of the larger conversation about IS education. With the changes in technology, JISE has explored how IS education has adapted to these changes. Previous special issues (http://jise.org/special.html) have covered such topics as:

- Agile in Teaching and Learning (2018)
- Academic Integrity: IS Education Perspective (2016)
- Healthcare in IT Education (2014)
- Online IS Education (2014)
- Global Information Security and Assurance in IS Education (2013)
- Ethics & Social Responsibility in IS Education (2011)
- Impacts of Web 2.0 and Virtual World Technologies in IS Education (2009)
- IS Education Assessment (2008)
- Flexible Teaching and Learning (2007)
- Systems Analysis and Design Education (2006)
- Data Modeling Education (2006)
- E-Commerce Education (2005)
- Enterprise Resource Education (2004)
- Case Studies for IS Education (2003)
- IS Security Education (2002)

It is only a matter of time before special issues on social media, data analytics, and other more recent technologies are developed and published.

As part of this special issue, JISE thanks all of the past editors-in-chief and the past and present board members (associate editors, senior editorial board members, editorial board members, and senior advisory board members), reviewers, and authors for their hard work and commitment to the journal. Without each of you, JISE would not be where it is today.

3. SPECIAL ISSUE PAPERS

With such a broad theme and with so many potential topics and approaches, there was a chance that the submitted articles would not fit together into subthemes or common topics. There was also a risk that the submissions would be too few in number or too focused on a singular topic due to the invited nature of the special issue. Thankfully, neither of these potential outcomes is the case. The 12 papers included in the special issue represent the best submissions. The authors represent nearly every aspect of IS education: faculty, department chairs, deans and associate deans, and college presidents; past and current leaders and board members within AIS, ACM, EDSIG, and other societies; AIS LEO Award recipients, AIS Fellows, and EDSIG Distinguished Fellows; regional campuses and large, state universities; and members of JISE's Senior Advisory Board, Senior Editorial Board, and Editorial Board. The papers cover a variety of themes, and they do so from multiple perspectives. The following sections briefly summarize the papers based on their common themes.

3.1 Retrospectives

The special issue begins with two papers that offer retrospectives on the information systems field and information systems education. The first paper features a look back at the last 30+ years from two friends whose careers have overlapped and intertwined during this period. In "Growth, Adaptability, and Relationships within the Changing Landscape of IS Education," Len Jessup and Joe Valacich discuss how they first met as doctoral students and how their relationship has evolved over time. They focus on the idea of adaptability as a key to their success in the constantly changing field of IS education, and they offer lessons learned from their experiences as they reflect on the last 30+ years.

Joey George and Kent Marett provide a historical perspective on IS education and curriculum in their paper, "The Times they are a Changin': How Non-Technology Factors have Affected IS Curriculum over Time." They argue that changes to IS degree programs have often been attributed to quickly-evolving technologies and the subsequent changing needs of the employers who hire IS graduates; however, they go on to explore other social and economic factors that inspired curriculum changes by assigning them to one of four eras along the IS timeline. They use enrollment figures and archival data to identify legitimate reasons and misconceptions that led to fluctuating programming requirements, the rise and fall of trendy courses, and the wholesale elimination of programs and faculty positions. They end with some predictions about the future of IS education and how university programs should prepare for the next era of IS academia.

3.2 Improving Pedagogy

The next theme in the special issue is improving pedagogy, with three papers addressing this topic. The first of these papers, "Building a K-16-Industry Partnership to Train IT Professionals," by Bogdan Hoanca and Benjamin Craig, describes an innovative program regarding curricular alignment and student needs. After identifying a need for more and better qualified candidates for many unfilled IT positions, a consortium of hiring authorities initiated discussions with educators to better align curriculum with employers' needs and to establish a pipeline in the education system for recruiting, growing, and retaining technology talent. This program is currently being developed by a partnership of industry professionals, university faculty, and local school district faculty and administrators in Anchorage, Alaska.

In "Teaching Critical Thinking, Problem Solving, and Design Thinking: Preparing IS Students for the Future," Machdel Matthee and Marita Turpin argue that critical thinking and problem solving skills are included in the IS curriculum as foundational skills because IS education researchers recognize the importance of these skills for future IS practitioners given the complexity of the technology-based society and economy of the future. The difficulty is with how to teach these skills. They report on a course for first-year IS students that focuses on the development of critical thinking and problem solving skills, and they provide details of the course design, delivery, and student perceptions.

Heikki Topi and Gary Spurrier tackle the ongoing question of whether to teach our students traditional versus agile systems development methodologies for enterprise projects in their paper, "A Generalized, Enterprise-Level Systems Development Process Framework for Systems Analysis and Design Education." While industry and academia put more emphasis on agile development approaches as they can be more flexible and effective than traditional approaches, this emphasis neglects certain aspects of project planning and execution that are mainstays of traditional methods. Topi and Spurrier present a generalized process framework that fully supports enterprise level projects but can also be selectively scaled back toward increased agility for smaller, less complex projects. In its full realization, the underlying dilemma is resolved as this framework combines extensive project planning and up-front requirements with iterative delivery.

3.3 Program Design and Curricular Models

Moving away from specific pedagogies, the special issue's next section focuses on program design and curricular models. In "Ingredients of a High-Quality Information Systems Program in a Changing IS Landscape," Diane Lending, Mike Mitri, and Tom Dillon describe the undergraduate Computer Information Systems major at James Madison University. Specifically, they discuss how the program has developed by following five essential guidelines. In addition, the paper addresses how the program will evolve in the context of rapid technological, business, and social changes by continuing to follow the guidelines as the curriculum adapts.

Tom Case, Geoff Dick, Mary Granger, and Asli Akbulut explore a new approach to teaching IS courses in their paper, "Teaching Information Systems in the Age of Digital Disruption." They propose that the concept of digital disruption should be an underlying theme in the IS major. They argue that the core IS course and the courses that make up the major need to be developed and centered around the transformation of business models, products, and services caused by emerging digital technologies.

The final paper in this section, "IS2010: A Retrospective Review and Recommendation," by Paul Leidig, Roger Ferguson, and John Reynolds, makes recommendations for improving the most recent undergraduate curriculum model (IS2010). They propose a new curriculum model that includes more programming concepts. The authors further recommend changes related to technical infrastructure coverage, specializations, course sequencing, and core competencies.

3.4 The CIS/MIS/IS Discipline

The next theme in the special issue looks at the CIS/MIS/IS discipline as a whole. The first of two papers, "The Transition from MIS Departments to Analytics Departments," by Andrew Urbaczewski and Kellie Keeling, examines the recent phenomenon of MIS departments partially or wholly transitioning into analytics departments. The authors reflect on the history of MIS departments and provide a glimpse of the future, both from the perspective of department chairs.

Jeff Babb, Les Waguespak, and Amjad Abdullat argue for a new perspective and focus for the IS discipline in their paper, "Subsumption of Information Systems Education towards a Discipline of Design." The IS discipline faces daunting challenges to its identity in research, education, and within business schools. The authors propose that the IS discipline should be grounded in design, defined as "a balance of aesthetic resonance and the feasibility of technical rationality," focused on business acumen, technical excellence, and leadership.

3.5 Strategic Issues for the Future

The final section contains two papers that look to the future, focusing on strategic issues facing IS education. The first of these papers looks at the gap between IS education and IS research. In "Bridging the Gap between IS Education and IS Research: What can be Done to Help," Allen Lee examines this gap by describing it and its causes. He then elaborates on how the gap can be bridged and offers three strategies for implementation.

The special issue closes with "Four Important Strategic Issues for Computer Information Systems Education" by Bruce Saulnier, Wendy Ceccucci, Pat Sendall, and Alan Peslak. The

authors ask for CIS stakeholders, in particular faculty, to consider four strategic issues: curriculum and pedagogy, business model and value proposition, diverse student body, and student success and completion. The paper does not provide prescriptive solutions to these issues; rather, the paper describes the issues and leaves it to faculty to address them within their own environmental context.

4. LOOKING FORWARD

Through all of the changes in technology over the past 30 years, there have been constants in terms of IS education. IS faculty and administrators have incorporated the notions of change and adaptability into their courses and degree programs. Partnerships with other academic institutions, professional organizations, and industry enabled students and faculty to remain connected to the world outside of the classroom.

Moving forward, IS faculty must prepare increasingly diverse student bodies for professional lives synonymous with constant change and disruption. Spurred by rapid changes in technology, an estimated 85 percent of the jobs that will exist in 2030 have yet to be invented (Dell Technologies, 2017). IS education, arguably more than any other discipline, will be reshaped by these rapid changes. Digital disruptions will be the new norm. In this environment, critical thinking and soft skills will only increase in importance.

Clearly, not all questions in the potential list of topics from the special issue's CFP were covered or answered by the papers in this special issue, but there is no denying that IS education is much different than it was 30 years ago. Over this time period, many IS programs merged into other programs (e.g, Accounting, Operations, Decision Sciences, etc.), were reconceptualized as entirely new entities (e.g., Information Schools, Informatics, etc.), or ceased operations altogether. Those programs that have survived the upheavals of the past 30 years will face even greater challenges in the next 30 years. Of course, we don't know what the future will bring, but we believe the discipline is up to the challenge, and JISE looks forward to seeing the future unfold.

5. REFERENCES

Davis, G., Gorgone, J., Couger, J., Feinstein, D., & Longenecker, H. E. (1997). *IS '97 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems*. New York: ACM and Park Ridge, IL: AITP.

Dell Technologies. (2017). Emerging Technologies' Impact on Society & Work in 2030. Retrieved September 12, 2019, from https://www.delltechnologies.com/content/dam/delltechnologies/assets/perspectives/2030/pdf/SR1940_IFTFforDellTechnologies_Human-Machine_070517_readerhigh-res.pdf.

Gorgone, J. T., Davis, G. B., Valacich, J. S., Topi, H., Feinstein, D. L., & Longenecker, H. E. (2002). IS 2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, 11, i-52.

Gorgone, J. T., Gray, P., Feinstein, D. L., Kasper, G. M., Luftman, J., Stohr, E. A., Valacich, J. S., & Wigand, R. (2000). MSIS 2000: Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, 3, i-51.

Gorgone, J. T., Gray, P., Stohr, E. A., Valacich, J. S., & Wigand, R. T. (2006). MSIS 2006: Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, 17(17), 1–58.

Nunamaker, J. F., Couger, J. D., & Davis, G. B. (1982). Information Systems Curriculum Recommendations for the 80s: Undergraduate and Graduate Programs. *Communications of the ACM*, 25(11), 781-805.

Topi, H., Karsten, H., Brown, S. A., Carvalho, J. A., Donnellan, B., Shen, J., Tan, B. C., & Thouin, M. F. (2017). MSIS 2016 Global Competency Model for Graduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, 40.

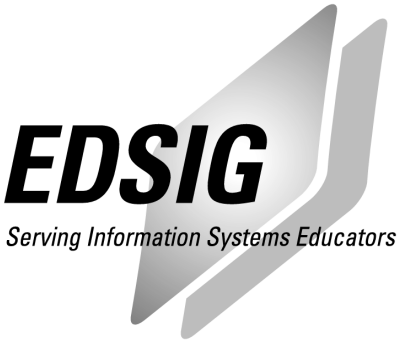
Topi, H., Valacich, J. S., Wright, R., Kaiser, K., Nunamaker, J. F., Sipior, J., & de Vreede, G. (2010). IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, 26.

AUTHOR BIOGRAPHIES

Lee A. Freeman is an associate professor of information systems management in the College of Business at The University of Michigan–Dearborn. He has a B.A. from the University of Chicago, and he received both his M.B.A. and Ph.D. in information systems from Indiana University. His teaching interests include systems analysis and design and information technology strategy; his primary research interests include online pedagogy, information technology in sports, and social media use by dark networks. He has published over 40 refereed manuscripts in journals and at conferences, including *MIS Quarterly, Communications of the ACM, Journal of Information Systems Education,* and *Communications of the Association for Information Systems*, among others. He is currently the Editor-in-Chief of the *Journal of Information Systems Education*.

Nolan J. Taylor is a clinical assistant professor of information systems in the Kelley School of Business at Indiana University-Indianapolis. He has a B.S. in electrical engineering from the University of Alabama, an M.B.A. from California State University-San Bernardino, and a Ph.D. in management information systems from the Terry College of Business at the University of Georgia. His teaching interests include database, accounting information systems, and information security. His research interests include decision support systems and information security awareness programs. His research has appeared in such journals as *Journal of Management Information Systems, Information System Research, Communications of the ACM,* and *Information & Management*. He currently serves as an Associate Editor of the *Journal of Information Systems Education*.

Information Systems & Computing
Academic Professionals



STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the Journal of Information Systems Education have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.

ISSN 2574-3872