

Why is the Learner-Centered Paradigm So Profoundly Important for Information Systems Education?

Jeffrey P. Landry

School of Computer and Information Sciences
University of South Alabama
Mobile, AL 36688
jlandry@usouthal.edu

Bruce M. Saulnier

Department of Information Systems Management
Quinnipiac University
Hamden, CT 06518
Bruce.saulnier@quinnipiac.edu

Teresa A Wagner

Farmer School of Business Department of Management
Miami University
Oxford, OH 45056

Herbert E. Longenecker, Jr.

School of Computer and Information Sciences
University of South Alabama
Mobile, AL 36688

ABSTRACT

This paper builds on the concept of the learner-centered paradigm described in the previous paper, by discussing its importance and relevance to postsecondary information systems education. Five key trends and issues for information systems educators are discussed in relation to the learner-centered paradigm. From these issues, seven propositions are presented for stimulating thought among IS educators.

Keywords: Learner-Centered Teaching and Learning, Outcomes-Based Education, IS Curriculum, Accreditation, Assessment

1. INTRODUCTION

The learner-centered approach (Huba and Freed, 2000) with its emphasis on actively engaging the learner in the educational process and on assessing well-defined educational outcomes, represents a paradigm shift in higher education. The Saulnier et al. paper, found elsewhere in this issue, introduces the learner-centered paradigm and provides a stark contrast between it and the more traditional and dominant teacher-centered paradigm. As a general educational approach, the learner-centered paradigm informs all fields of study. So, why do educators in postsecondary information systems (IS) programs especially need to

consider the value of the learner-centered approach? This paper attempts to answer that question.

When referring to the paradigm, this paper uses the terms *learner-centered* and *outcomes-based* interchangeably, because they are both part and parcel of the same approach. Usually the term learner-centered is used when the emphasis is on issues relating to the student, while the term outcomes-based is used when the emphasis is on the learning outcomes and their assessment.

In this remainder of this paper, we look at five major trends and issues that are critically important to postsecondary IS education. For each IS education trend or issue, we discuss the relevance of the learner-centered

paradigm and offer one or more propositions to stimulate critical thought among IS educators and to drive future research that synthesizes the learner-centered approach with that IS education area.

2. IS EDUCATION TRENDS AND ISSUES

The five key areas for IS education include recruiting and retention of students in information systems programs, the issue of learning in a dynamic field, the prevalence of professional certifications, the presence of a longstanding outcomes-based model curriculum, and the increasingly outcomes-based approach required by accrediting agencies.

2.1 Recruiting and Retention

The learner-centered paradigm's emphasis on engaging students and focusing on student success is critical to attracting and retaining students. The recent enrollment declines in computing programs nationally have been a wake-up call to IS programs accustomed to a healthy flow of students motivated by career opportunities. With fewer students, IS programs cannot afford a selective admissions orientation nor survive with courses with low success rates that threaten to further "weed out" students from the program. The learner-centered paradigm challenges us to find a successful approach for all students. Its emphasis is on actively engaging the student in a learning process that promotes student satisfaction and success.

The learner-centered paradigm offers an alternative, by engaging students in the learning process using techniques such as active learning. By exploring rather than listening, and with incremental feedback, students are likely to learn more (Huba and Freed, 2000, p. 153). This concept is analogous to a fundamental tenet of information systems, which has long held that user participation in systems development leads to increased levels of involvement, system acceptance, usage, and satisfaction (Barki and Hartwick, 1994; Baroudi, Olson, and Ives, 1986; Hartwick and Barki, 1994; Hunton and Beeler, 1983) and reduces the potential for user resistance (Markus, 1983). Likewise, a student who is actively engaged is likely to be more involved, successful, and satisfied as a learner. More successful and satisfied learners should increase the rate of retention. Through greater student satisfaction, success, and retention, a program's reputation will improve, leading to increased enrollments both through switching of majors and new recruits from feeder schools through word-of-mouth. Therefore,

Proposition 1: Actively engaging learners leads to higher learner satisfaction, success, retention, and increased program enrollments

2.2 Learning in a Dynamic Field

The student-centered discovery paradigm is a useful means of integrating new knowledge content in a dynamic field. IT as a field is constantly changing with new technologies and new uses for IT that, despite Carr's noted contrariness (Carr, 2003), continues to enable profound organizational impacts (Schrage, 2003). The teacher-centered paradigm would focus on course and curriculum content change to deal with

technology change; probably all-too-often settle for a one-size-fits-all curriculum; and over-rely on faculty as the curriculum change agent. The learner-centered paradigm would empower students to seek out new knowledge in the technologies and trends that interest them, discovering and learning under the guidance of a teacher-coach. These skills developed in the learner-centered paradigm are ideal training for the information systems professional. We are frequently faced with new technology which requires evaluation and adoption. Technology change can be so radical that IT professionals' jobs may undergo radical change, making lifelong learning skills critical to career success and survival. Therefore,

Proposition 2: Learner-centered teaching improves student skills in the areas of technology evaluation, innovation adoption, and lifelong learning

2.3 Learner-Motivated Professional Certifications

The learner-centered approach is by its very nature outcomes-based, so it is a good fit with a field which values professional certification based on knowledge and skill attainment. Our dynamic field is also a very professional one, and IT professionals we prepare are eager to earn vendor specific certifications in a variety of in-demand skill areas (Maguire, 2006), including Windows administration, networking, database management, wireless, project management, and information management (Rogin, 2006).

The Center for Computing Education Research's IS exit assessment exam (CCER, 2004) produces a unique vendor neutral certification, called the Information Systems Analyst (ISA). It is a professional certification (McKell et al., 2005, 2007) because the exam measures skills aimed at the program exit and professional entry level (Landry et al., 2000; Colvin, 2008). At the same time, the exam is tied to the IS2002 model curriculum (Gorgone et al., 2002). The exam provides scores on outcomes-based and norm-referenced direct assessment in line with the values of the learner-centered paradigm.

The outcomes-based aspect of the learner-centered paradigm is consistent with the notion of professional certification, and integrating the two in the classroom can be mutually beneficial. With both professional certifications and outcomes-based learning, students are motivated to value a defined outcome, explore knowledge related to that outcome, improve their ability to perform according to that outcome, and eventually get assessed according to that outcome. Therefore,

Proposition 3: Integrating professional certification training into the classroom motivates heightened student awareness of and desire to meet professionally developed standards

And,

Proposition 4: Outcomes-based classroom assessment prepares students for professional certification training.

2.4 Outcomes-Based Model Curriculum

The IS2002 model curriculum (Gorgone et al., 2002), with its outcomes-based structure, is a rich source for defining IS

program-specific learning outcomes (Daigle et al., 2003). The IS model curriculum has for many years espoused an approach to curriculum modeling that focuses more on detailed specification of learning units and exit skills and less-so on courses and content topics. The IS2002 model curriculum's approach is consistent with the outcomes-based paradigm (Landry et al., 2005, 2004), and provides a rich source of standards for student and program assessment. The learning units of IS2002 provide a rigorous, cognitively paced definition of outcomes, and the exit skills (Landry, 2000, and <http://www.IS2002>) define industry expectations that remained relatively consistent over a eight-year period (Colvin, 2008).

The CCER provides a software utility to map (Daigle et al., 2003) the IS2002 learning units of any university program's courses, forming a mechanism for a unique nationally normed direct assessment of university program outcomes (McKell et al., 2007; Longenecker et al., 2007). Likewise, the learning units can also be mapped on the ABET standard program outcomes, or to university specified program objectives, thereby giving a direct measure of program outcome achievement.

The existence of the rich set of pre-specified, IS-curriculum-specific outcomes, and the availability of software tools to assist in mapping outcomes are helpful to faculty looking to adopt the learner-centered paradigm. Well-defined IS outcomes are a necessary component of outcomes-based teaching, and faculty struggling with outcomes may be more likely to remain non-adopters, or discontinue use. Therefore,

Proposition 5: Using outcomes specified by the IS model curriculum and outcome mapping tools encourages and assists faculty in the process of adopting an outcomes-based teaching approach.

Furthermore, efforts are underway to create a community of practice centered around the outcomes specified by the model curriculum, and the effectiveness of various approaches to teach these outcomes. The CCER, for example, is developing support for a sharing mechanism to enable the faculty community to study the learning methods used for attainment of learning unit outcomes (as well as scores per outcome) that can be used as suggestions for outcome modification, or be directly imported into University course planning structures (Longenecker et al., 2007). In a paper (Wagner et al., 2008) found elsewhere in this issue, the conceptual framework for a learner-centered outcome development template is presented. The idea is that to be learner-centered requires specific actions be taken to be consistent with the learner-centered paradigm (Saulnier, et al., 2008). Success in achieving an outcome can be shared by responsive faculty interested in improving the achievements of their students. This process can be managed to make significant amounts of relevant information available to the participating community. The proliferation of such a community could have widespread positive impacts on IS programs and the field. Therefore,

Proposition 6: A community of practice centered around the study of IS outcomes and the effectiveness of various learner-

centered approaches in teaching IS outcomes facilitates the healthy growth and survival of IS programs.

2.5 Outcomes-Based Accreditation

Outcomes-based is now an ABET-required approach for IS program assessment (Yaverbaum et al., 2007) as well as espoused approach for institutional assessment by regional accreditation bodies, so learner-centered and outcomes-based teaching and learning fit right in with accreditation requirements. Outcomes-based program assessment isn't really new for ABET, but is being increasingly emphasized. ABET is transitioning away from practices such as counting semester hours of course content as a measure of program effectiveness and focusing instead on program success as a function of student outcome achievement. ABET's approach incorporates ideas such as the use of multiple methods of assessment, rubrics, mapping course outcomes to program outcomes, the use of CCER direct assessments (McKell et al., 2007), and the involvement of multiple constituents. From an accreditation perspective, student-centered, outcomes-based education for IS is already here. Not only is the approach necessary for accreditation, ABET is providing materials through its website (ABET, 2008), and through seminars by Gloria Rogers which provide useful training to those charged with assessment of university programs.

By being in alignment with evolving accreditation standards, the outcomes-based approach, can be useful in moving towards accreditation. If a program already has courses that are outcomes-based, they provide a source of well-defined outcomes that can be mapped into the program's outcomes, or be a source for defining program outcomes. Outcomes-based courses also provide a source for program assessment methods and data. Each teacher that has adopted an outcomes-based approach is a ready candidate for involvement in program assessment. Therefore,

Proposition 7: Adopting learner-centered, outcomes-based teaching moves an IS program closer to achieving accreditation standards for continuous program improvement.

3. CONCLUSIONS

This paper has demonstrated how the learner-centered approach is relevant and important to postsecondary IS education. For IS faculty who want to take a fresh look at their teaching, we have provided a framework (Saulnier, et al., 2008) that explores the learner-centered paradigm. This paradigm suggests that we start not with course content and curriculum design, but focused on students as learners and centered on learner-success based on outcomes achievement. We have also explored a generalized template method for the construction and evaluation of learner-centered outcomes (Wagner, et al., 2008) as well as several explicit examples.

One important area for future work should be to address more specific applications of the learner-centered paradigm to postsecondary IS programs. This work could go in any number of directions. Using the propositions presented in this paper, many different avenues of research are possible.

We invite any faculty to participate in a community of practice centered on learner-centered, outcomes-based approaches for IS (Pardue et al., 2006; Longenecker et al., 2007), and incorporating the existing elements just described. This movement has the potential to create profound impacts on IS learning and IS workforce productivity, and there are many opportunities for IS educators to work and share their success.

4. REFERENCES

- ABET (2008). "Assessment Planning with Gloria Rogers, Ph. D." accessed January, 2008 <http://www.abet.org/assessment.shtml>
- Agarwal, R., and Prasad, J. (1997), "The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies." *Decision Sciences*, (30:2), 1997, pp.557 – 582.
- Barki, H., and Hartwick, J. (1994), "Measuring User Participation, User Involvement, and User Attitude." *MIS Quarterly* (18:1) March 1994, pp. 59-62.
- Baroudi, J. J., Olson, M. H., and Ives, B. (1986), "An Empirical Study of the Impact of User Involvement on System Usage and User Satisfaction." *Communications of the ACM* (29:1), pp. 232-238.
- Carr, N. (2003), "IT Doesn't Matter." *Harvard Business Review*, May 2003, pp. 41-49.
- Center for Computing Education Research (2004), IS Exit Assessment Exam, URL: <http://www.iseducation.org>.
- Colvin, Richard (2008), "Information Systems Skills and Career Success." Masters Thesis, University of South Alabama.
- Daigle, R. J., Longenecker, H. E. Jr., Landry, J. P., and Pardue, J. H. (2003), "Using the IS 2002 Model Curriculum for Mapping an IS Curriculum." Proceedings of Information Systems Education Conference (ISECON 2003), November 2003, San Diego, CA.
- Davis, G. B., Gorgone, J. T., Couger, J. D., Feinstein, D. L., and Longenecker, H. E. Jr. (1997), "IS '97 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems." ACM, New York, NY and AITP (formerly DPMA), Park Ridge, IL.
- Gorgone, J. T., G. B. Davis, J. S. Valacich, H. Topi, D. L. Feinstein, H. E. Longenecker Jr. (2002), "IS 2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems." ACM, New York, NY, AIS, and AITP (formerly DPMA), Park Ridge, IL.
- Hartwick, J., and Barki, H. (1994), "Explaining the Role of User Participation in Information System Use." *Management Science* (40:4), pp. 440-465.
- Huba, M. E. and Freed, J. (2000). "Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning." Needham Heights, MA: Allyn and Bacon.
- Hunton, J.E., Beeler, J.D. (1997), "Effects of User Participation in Systems Development: A Longitudinal Field Experiment." *MIS Quarterly* (21:4), December 1997, pp. 359-388.
- Johnson, D. W., R. T. Johnson, and E. J. Holubec (1993), *Circles of Learning: Cooperation in the Classroom*. Interaction Book Co; Fifth Edition (June 1993).
- Landry, Jeffrey P., Longenecker, Herbert E. Jr., Haigood, Brandon, and Feinstein, David L. (2000), "Comparing Entry-Level Skill Depths Across Information Systems Job Types: Perceptions of IS Faculty." Americas Conference on Information Systems, August 2000, Long Beach, California.
- Landry, J. P., Pardue, J. H., Longenecker, H. E. Jr., Reynolds, J., McKell, L., and White, B. (2005), "Using the IS Model Curriculum and CCER Exit Assessment Tools for Course-Level Assessment." Proceedings of ISECON 2005, v 22 (Columbus OH): §2123. ISSN: 1542-7382.
- Landry, J. P., Pardue, J. H., Reynolds, J. H., and Longenecker, H. E. Jr. (2004), "IS 2002 and Accreditation: Describing the IS Core Areas in Terms of the Model Curriculum." Proceedings of ISECON 2004, November 2004, Newport, RI.
- Longenecker, H. E. Jr., Leidig, P. L., McKell, L. J., Reichgelt, H., Russell, J., Waguespack, L., Landry, J. P., Wagner, T. A., and White, Bruce A. (2007), "AITP Sponsored Enhancements to the Information Systems Model Curriculum", Proceedings of ISECON 2007, Pittsburgh, PA.
- Maguire, James (2006), "Top Four IT Certification Categories." *Datamation*, September 28, 2006, Accessed from http://itmanagement.earthweb.com/career/article.php/11067_3634771_3, January 14, 2008.
- Markus, M. L. (1983), "Power, Politics and MIS Implementation." *Communications of the ACM* (26:6), June 1983, pp. 430-444.
- McKell, L. J., Longenecker, H. E. Jr., Landry, J. P. and Pardue, J. Harold (2007), "Integrating Institutional And Individual Information Systems Assessment Through The Center For Computing Education Research." Proceedings of AMCIS, August 2007.
- McKell, L. J., Reynolds, J. H., Longenecker, H. E. Jr., Landry, J. P., and Pardue, H. J. (2005), "Information Systems Analyst (ISA): A Professional Certification Based on the IS 2002 Model Curriculum." *Review of Business Information Systems*, Summer 2005, Vol. 9, No. 3.
- Pardue, J. H., Landry, J. P., Longenecker, H. E. Jr., and Lynn McKell, Lynn (2006), "Computing Program Curriculum Assessment: The Emergence of a Community of Practice." Special Issue: Information Systems Programs and Curriculum Assessment, *Journal of Informatics Education Research*, Spring 2006, Vol. 8, No. 2, pp. 105-119.
- Rogin, J. (2006), "Five Certifications for Aspiring CIOs." *Federal Computer Week* (FCW.COM), September 4, 2006, Accessed from http://www.fcw.com/print/12_32/news/95883-1.html, January 14, 2008.
- Saulnier, B. M., Landry, J. P. Wagner, T. A., and Longenecker, Herbert E. Jr. (2008), "From Teaching to Learning: Learner-Centered Teaching and Assessment In Information Systems Education." *Journal of Information Systems Education*, current issue.
- Schrage, M. (2003), "How IT Can Differentiate Your Business from the Competition." CIO.Com, August 1,

2003, Available at http://www.cio.com/article/29594/How_IT_Can_Differentiate_Your_Business_from_the_Competition/3, Accessed January 14, 2008.

Wagner, T. A., Longenecker, H. E. Jr., Landry, J. P. and Saulnier, Bruce M. (2008). "A Methodology to Assist Faculty in Developing Successful Approaches for Achieving Learner Centered Information Systems Curriculum Outcomes: Team Based Methods." *Journal of Information Systems Education*, current issue.

Yaverbaum, G., Lidtke, D., Reichgelt, H., and S. Zweben (2007), "Outcomes-based computing accreditation: program assessment." *SIGCSE Bull.*, Vol. 39, No. 1, March 2007, 281-282. DOI=<http://doi.acm.org/10.1145/1227504.1227410>.

Teresa A. Wagner is Teresa A. Wagner is a Visiting Assistant Professor of Management in the Farmer School of Business at Miami University in Oxford, Ohio. Her doctorate is in Industrial Organizational Psychology from Virginia Tech. She has worked on projects associated with ABET accreditation and NSF grants and has been an invited speaker for meetings of the Society for Human Resource Management. Teresa is the 2008 Associated Student Government Outstanding Professor of the Year for Miami University.



AUTHOR BIOGRAPHIES

Jeffrey P. Landry is an Associate Professor of Computer and Information Sciences (CIS) in the School of CIS at the University of South Alabama. He serves as a Center for Computing Education Research (CCER) Contributor, is an ABET IDEAL Scholar, and is the information systems assessment and self-study leader for the information systems program at South Alabama. He has co-organized two national workshops on information systems curriculum and assessment for the CCER, and has published at various IS education journals and conferences.



Bruce M. Saulnier is Professor of Information Systems Management in the School of Business at Quinnipiac University. A past-president and Distinguished Fellow of the International Society for Exploring Teaching and Learning (ISETL), Bruce has been a featured speaker at numerous conferences focusing on the Scholarship of Teaching and Learning (SoTL). A past recipient of the Quinnipiac University Outstanding Faculty Member award and the 2007 recipient of the Information Systems Education Conference (ISECON) Best Paper Award, Bruce was honored as the 2003 Connecticut Professor of the Year by the Carnegie Foundation for the Advancement of Teaching.



Herbert E. Longenecker, Jr. is Professor of Information Systems in the School of Computer and Information Sciences of the University of South Alabama. He teaches mainly advanced graduate classes utilizing team-based project oriented learning. He is Director for the ICCP Education Foundation Center for Computing Education Research which produces a nationally-normed assessment exam for IS programs based on IS2002. He is the co-chair for the national Model Curriculum for Information Systems of the AITP, AIS, and ACM organizations for IS'90, '95, '97, and 2002. He is the distinguished "Educator of the Year" for the AITP. He received the "2007 DAMA Education Award for Outstanding Research Contributions in the area of IRM/DRM".





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.

Copyright ©2008 by the Information Systems & Computing Academic Professionals, Inc. (ISCAP). Permission to make digital or hard copies of all or part of this journal for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial use. All copies must bear this notice and full citation. Permission from the Editor is required to post to servers, redistribute to lists, or utilize in a for-profit or commercial use. Permission requests should be sent to the Editor-in-Chief, Journal of Information Systems Education, editor@jise.org.

ISSN 1055-3096