AITP-Sponsored Enhancements to the Information Systems Model Curriculum

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ABSTRACT

The Association of Information Technology Professionals (AITP) released its first model curriculum in 1981. AITP jointly sponsored IS'90, IS'97 and IS2002 model curricula. The AIS and ACM are involved in developing a next generation curriculum. This AITP response represents a synergistic approach utilizing the IS2002 Model curriculum to offer a strategy to upgrade the performance of graduates. We will implement a web-based learning community to make available learning enhancement techniques developed through shared assessment observations. The thrust of this initiative suggests this is a good time, given a very stable and highly effective curriculum model, IS2002, to embrace the newer idea of learner-centered vs. teaching concepts. We are proposing to use the zeal of faculty associated with the AITP to tackle this problem as a community. We plan to use learning units of IS2002 to map course outcome statements. We ask faculty to volunteer data for courses they are teaching. At the conclusion of the course those faculty will see what other faculty have entered for each of the required fields, as well as their CCER score for this learning unit. Thus, this curriculum enhancement product will be to focus as a community on an assessment model as a basis for improvement. We will implement a group model that will utilize sharable group outcomes related to the curriculum structure to map outcomes to skills, program outcomes, and program objectives and share the results of the process with the community in web-delivered materials as well as annual meetings.

Keywords: curriculum, information systems, accreditation, assessment

1. INTRODUCTION

The Association of Information Technology Professionals (AITP) has had an interest in sponsoring curriculum activities dating back to the beginning of the Information Systems Discipline. Its first model curriculum was released in 1981 a year before the ACM classic work. AITP jointly sponsored IS'90, IS'97 and IS2002 model curricula (Couger 1995, 1997; Davis 1997; Gorgone 2002).

There is no doubt that these works had a significant hand in depicting and advancing the information systems profession. Currently the AIS and ACM are involved in developing a next generation curriculum as revealed at the AIS meetings in August 2007. We salute this effort! The AITP response below represents a non-competitive synergistic approach utilizing the IS2002 Model curriculum to offer a strategy to upgrade the performance of graduates. We will implement a web-based learning community to make available learning enhancement techniques (Huba 2000) developed through shared assessment observations. As the new curriculum becomes available we will transition to utilizing it as a basis.

One of the clear focus of the Information Systems curriculum is the awareness of the importance of empowered people. This is reflected in the mission of information systems as it is stated by McNurlin and Sprague (1999):

> *"to improve the performance of people in organizations through the use of information technology. … Misunderstanding the necessity for supporting people leads to disastrous consequences: the focus MUST BE to develop excellent people focused business systems with inextricably woven information systems with related, appropriate, accessible data. People do the work of the organization!* "

Thus, as educators our mission must be focused on the disciplinary mission and environment of information systems, yet at the same time provide the bridge for our students to pass from high school experiences to readiness to assume a professional role within the industry. For any community of learners we learn from that mission is very important (Huba 2000). A sense of mission makes it possible to study all actions with respect to this mission. The curriculum models have focused on the necessity to develop "confident and competent" graduates. The new AIS model maintains this recommendation. Clearly this involves both a mission focus, and an excellent educational methodology to achieve the provable socio-technical excellence needed by society.

Recent surveys (Colvin 2007) have shown that recent graduates (now in industry from 1-3 years) feel well educated and prepared by the IS2002 skill set (Landry 2000). Therefore, while there are enormous technological changes taking place within the world: Interpersonal skills are still paramount! Project management ability is necessary. The skills of business process development coupled to information analysis and information systems development are expected. Database, software and web development are required. Networking knowledge is important for graduates. Even though as much as 50% of software development may be off-shored, 50% is still done locally using tools with considerably higher performance. Large numbers of foreign nationals still clamor to be absorbed in the US information technology industry.

An important question is, "Does one size curriculum model fit all needs?" The assumption in all of the IS model curricula to date has been that one model is sufficient. In 2000, survey data taken from 3000 job ads from 17 national news papers looked at ALL computing skills, and found a list of 37 sub-skills which grouped into 8 major skills. IS and IT program skills were found to be very similar, and exceptionally different from computer science/software engineering skill sets by relative levels of the skill expected. IS related skill sets factored into a common group and two additional areas Data Management, and Network Analysts. To achieve these skills sets required several additional courses for each specialty area. Because of the 10 course maximum imposed by the AACSB, these specialty areas were not developed. At this time, inclusion of outcome statements for the Data Management Specialization may be a good idea (Longenecker et al 2006). However, our survey of recent graduates indicates that graduates are well served by the current 37 skill set model without any alterations (Colvin 2007).

Information systems enrollments are down, and information technology enrollments are rising rapidly. The precise nature of the role of our graduates must be understood, not only today, but for the future. The AIS/ACM effort proposes to address this issue. This is truly a perplexing issue—our graduates who are well qualified get hired! Fear due to stories of job off-shoring seem to scare potential IS students but not IT students.

We have observed that in larger organizations there appears to be a demand for professionals skilled in software engineering,

systems engineering and data management. While professionals holding these job titles usually have many years of experience, at least ten years of experience, we must strive to enable our graduates to become competitive within these job markets. Again, what does this mean we should change in terms of curriculum design or change in curriculum implementation? IS programs do not really train software engineers, or systems engineers. It is intriguing to consider adding some outcomes based on the INCOSE Body of Knowledge, however. We recognize that systems engineers, like data management professionals have usually have a minimum of ten years after their BS or MS degree programs before they would be hired.

Could it be, that if we did a lot better job with our existing students, we might have more students? Not just a little better, but a whole lot better. While IT attracts students because of its focus on the apparent "glitz" of technology, most of us in IS feel a real excitement as we practice our profession. To truly help someone achieve enhanced fulfillment on an enterprise scale is a lot of fun. Those involved can easily empathize with these feelings. From an educational stand-point our education colleagues (Huba 2000) would ask us to focus on a new idea: ***"if we keep on doing what we have been doing, we'll keep on getting the same results".***

2. PROPOSED INITIATIVE

The thrust of this initiative is to suggest that this is a good time, given a very stable and highly effective curriculum model, IS2002, to embrace the newer idea of learner-centered vs. teaching concepts. What we are really proposing is to use the zeal of the faculty associated with the AITP to tackle this problem as a community. Assessment is not an optional concept either with ABET, or with regional accrediting agencies. However, really taking it seriously presents an opportunity to create a world-class empowered culture for ourselves and for our students. We all remember that professor who inspired us to think, to take on the solution of ill-defined and exciting problems that bless our field.

As a community of academic professionals here is what we are asking you to consider: For the sake of our students, become involved in this "Learning Community". We are currently developing technology some of which is available now, and some that will be in place within several months to enable you to participate.

We plan to use the learning units of IS2002. They can be mapped to your own course outcome statements (In IS2002 the result of this mapping produced "local objectives", now outcomes). We would ask you to volunteer to share the following data for courses you are teaching:

1. Your Course Name
2. The IS2002 Learning Unit Mapped to this outcome
3. Your course outcome statement
4. Your plan to elicit student learning
5. Your performance measures (rubric, exam, other form of assessment)
6. Your commentary on your effectiveness using your plan
7. Your suggestions for improvement of your course next time
8. Your CCER direct assessment score for this outcome (if you are a participant in CCER)

Your personal identity and that of your institution will be kept confidential. However, once you have identified the IS2002 Learning Unit, you may observe what other faculty have used as an outcome, plan, etc. At the conclusion of the course you will see what other faculty have entered for each of the required fields, as well as their CCER score for this learning unit. The AITP task force, including you will make suggestions for what might be an optimal outcome statement, and plan to elicit student learning. You are under no obligation whatsoever to use any of the information. However, if you wish to become part of the "active community" you may become involved indiscussions over the issues. Of course our information will be fully available to the AIS/ACM for use in their update process.

Currently, some institutions are already very effective, while some have a way to go (see figure 1). AS we learn to put out extra effort and share our experiences it is our hypothesis that we will all grow, and our student's performance will improve. Our hope in interpreting this data is that if the approaches utilized by the best are shared, there is a significant change for improvement.

Thus, this AITP sponsored curriculum enhancement product will be to focus as a community on the Gloria Rogers Assessment model as a basis for improvement. We will implement a group model of her approach that will:

1. Utilize sharable group outcomes related to the curriculum structure
2. Map outcomes to skills, program outcomes, and program objectives
3. Enable Simon Model synthesis of participant outcomes giving recommendation for participants
4. Enable collection of best educational practices by tracking learner-centered approaches. Groups within the community will probably wish to publish their results
5. Capture Performance criteria and methods of measurement
6. Capture, operationalize and share rubrics and other assessment structures in a non-faculty-time-abusive manner.
7. Share the results of the process with the community in web-delivered materials as well as annual meetings

3. CONCLUSIONS

This paper briefly outlines the concepts that can ensure that the following issues are achieved, and that a road map to the AITP sponsored curriculum enhancement efforts will synergistically support the AIS/ACM curriculum initiatives, and will significantly benefit the participating IS community. The results will ensure:

1. Curriculum focus on mission of IS to enhance the performance of people through the application of IT
2. Curriculum implementation based on sound educational assessment methodology
3. Integrating assessment in curriculum deployment to ensure a transition from "Teaching to Learning Centered" Focus (Huba 2000)
4. Relating learning structures to outcomes, program outcomes, exit skills through the assessment process
5. Use learning units (for now) to capture IS educator creativeness in outcome expression and focus on optimizing learning centered approaches to form a learning community
6. Ensuring that the learning units form threaded sequences through community participation
7. Validation of exit level skills with an ongoing educational process by surveying industry groups including recent graduates who participate in the learning community
8. Utilizing CCER/ICCP national assessment and certification process (Landry 2003, 2004; McKell 2004, 2005, 2006, 2007) for the ISA and new CDMIQ certifications
9. Ensure a focus within the curriculum on quality (CMU 2004; CMMI 2002)

We will develop over the next few years methods for achieving sharable recommendations by initiating all of the following activities:

1. Soliciting participation from any and all IS faculty, immediately through involvement with Learner Centered Assessment (Huba 2000) particularly that which optimizes sharing of approaches, techniques, tools, and ideas through a web-based repository to support the learning community.
2. Work with the results of the forming AIS/ACM curriculum development efforts as they are available
3. Explore relationships with SIGITE to optimize cross fertilization of ideas and approaches particularly in specialty or focus areas (Strong 2004; Longenecker 2006a,b)
4. Incorporate not only AITP input, but other professional organizations who have a stake in the outcome of the curriculum including DAMA (Henderson 2004, 2006) and INCOSE
5. Work with the CCER and ICCP to ensure that graduates meet expected professional standards (McKell 2006, 2007), and that this process is optimized not only through direct assessment, but through the learning community.
6. Invite all IS faculty to become part of the learning community to share assessment and learning concepts
7. Provide recognition for participation in publications and presentations

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APPENDIX A

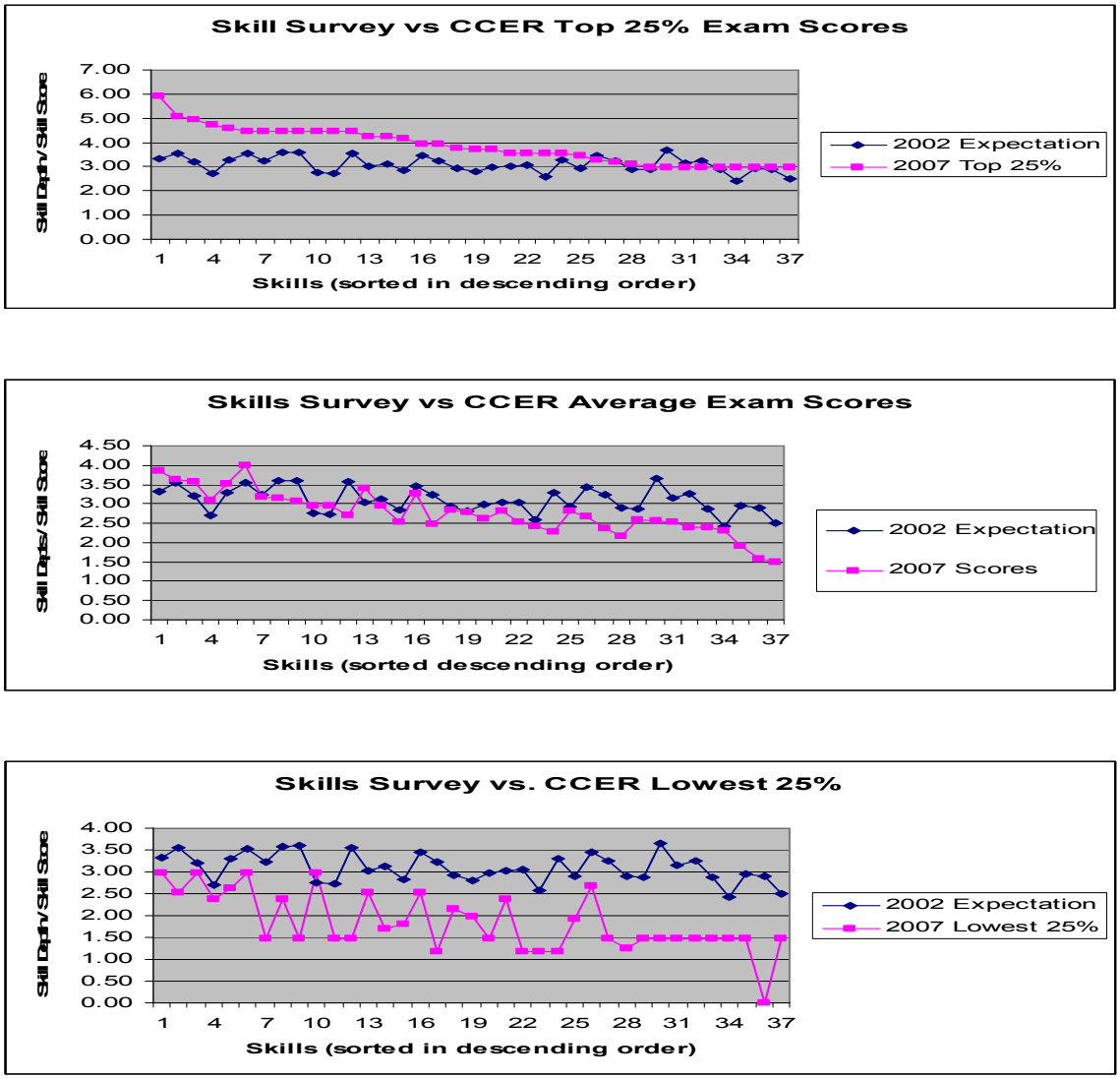

Figure 1. Comparison of Success in achieving Desired Skills.

The upper panel shows the results of the top 25% of US Universities who for the most part exceeded skill expectations that were the basis for IS2002. The middle graph shows the results for the average of all US universities; frequently many skills were not fully achieved. The lower graph shows the results for the lowest 25% of US Universities, and most expectations are far from met.