MIS Faculty Perceptions Regarding the Reengineered Organizational & End-User Information Systems Curriculum in Information Technology Education

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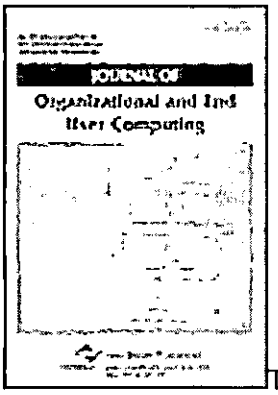

The **Journal of Organizational and End User Computing (JOEUC)** provides a forum to information technology educators, researchers, and practitioners to advance the practice and understanding of organizational and end user computing. The journal features a major emphasis on how to increase organizational and end user productivity and performance, and how to achieve organizational strategic and competitive advantage. JOEUC publishes full-length research manuscripts, insightful research and practice notes, and case studies from all areas of organizational and end user computing that are selected after a rigorous blind review by experts in the field.

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ABSTRACT

The emphasis on the use of organizational computing for providing enhanced productivity at the desktop level as well as for competitive advantage continues to surface as a critical success factor in IT implementations. Given this scenario and trend of integrating technology into all aspects of business and organization, the Office Systems Research Association's recent revision of the Organizational End-User Information Systems (OEIS) curriculum model provides an opportune setting for determining the value of the model regarding undergraduate education in end-user information systems. This study follows an established method for examining IS curriculum perceptions by MIS faculty in hopes of providing a realistic snapshot of the model's strengths and weaknesses to aid the actual decision and implementation process of end-user information systems undergraduate curricula. Key findings regarding the perceived importance of the curriculum objectives are reported as well as conclusions, implications and suggestions for future research in organizational computing curriculum development.

Keywords: end-user information systems, end user computing, IS Curriculum Development, business information systems, organizational & end-user information systems (OEIS)

INTRODUCTION

As technologies and organizational dynamics change, information technology (IT) managers seek employees that have the background to match the current needs of the organization. Information systems employees often gain their preparation in a university IS program, therefore, university faculty must continually evaluate whether their IT programs are in congruence with the needs of the students while equipping them for a career in their chosen field.

Knowing the educational gaps that exist between what IT managers view as critical end-user skills and the curriculum that is currently being implemented in information systems undergraduate programs (Tang, Lee, & Koh, 2000), the Office Systems Research Association (OSRA) published an updated 2004 Model Curriculum in Organizational End-User Information Systems. The OEIS model is a guide for undergraduate curriculum design in the area of information technology (IT), developed by IT educators and business professionals through numerous web-based and face-to-face group sessions (Hunt, 2004).

There still remains debate over the development of curriculum models between the academic and practitioner communities. This research provides an analysis of information systems faculty perspectives of the 2004 OEIS curriculum model.

LITERATURE REVIEW

Curriculum models for information systems undergraduate programs have been developed by many organizations: OSRA (Office Systems Research Association), ACM (Association for Computing Machinery), DPMA/AITP (Data Processing Management Association/ now the Association for Information Technology Professionals), and AIS (Association of Information Systems) (Tang et al., 2000). A gap continues to exist between

existing information systems undergraduate curricula due to the limited scope of most curriculum committees. One possible reason for this inconsistency lies in the perception that the range of business needs is too broad for any one curriculum to satisfy (Haworth & Van Wetering, 1994). Another reason for the gap may be that communication between the business community and academia is inadequate (Gambill & Jackson, 1992).

Many schools are limited to following curricula recommendations because of faculty preferences and accreditation requirements that limit the number of courses that can be offered in majors (Watson et al., 1990). Accreditation and established college hour requirements also limit the types and variety of classes that can be offered.

Trauth, Farwell, and Lee (1993) call for a bridge between the long-term educational approach of the classroom and the short-term skills expectation of the workplace. The authors proposed that the bridge could take the form of (1) students taking more courses that focus on specific technologies, software packages, and programming languages, (2) schools and companies working together to develop cooperative education or internship positions, and/or (3) companies using in-house training for new employees.

Again, research has shown that a gap exists between the expectations between the expectations of Information Technology managers and traditional IS academic programs (Tang et al., 2000). Closing the expectation gap requires the involvement of all stake holder groups: professors, IS managers, end-user managers, and consultants.

Many end-user computing academic programs require a heavy technical or business emphasis. A happy medium, or integration of skills, should be reached. Educators have seen this problem, but there has been a slow reaction in implementing the required curriculum changes. IS

positions are demanding communications, interpersonal, and management skills, a seemingly ideal place to begin an end-user curriculum.

Organizational and End-User Computing (OEIS)

End-user computing continues to be a key issue of investigation in information technology management among researchers and practitioners (Hunt & Hong, 1993). Fabbri and Mann (1993) examined the ACM & DPMA curriculum models, recommending a broader discipline to provide the academic foundation for the information age. OEIS tries to provide a solid IS foundation encompassing the areas of IS commonly referred to as end-user computing, computer-support work, performance improvement technologies, business software applications, technical training and development, collaborative technologies and knowledge management as well as planning and implementation of IT at the desktop level. OEIS differs from other domains of information systems primarily in its focus on systems that support individual and work group processes and employee performance. (Regan, 1996).

Lee (2005) recently discovered the importance of soft information skills after examining the skill requirements of systems analysts in Fortune 500 organizations. From the analysis of the data obtained from the respondents, Lee further solidifies the significance of core business knowledge to systems analysts because they often become blended into the business processes of the firm. Moreover, the findings indicate that it is necessary for systems analysts to possess both behavioral and technical skills. In short, it can be argued that analysts need soft, behavioral skills, as much as hard, technical skills. More specifically, Lee noted that specific content areas that are most likely to be in demand were database, functional business knowledge, communication skills, interpersonal skills, and all phases of the IS development cycle (which has often been a key element and content coverage of the OEIS Model Curriculum).

Galup and Dattero and Quan (2004) investigated the desired information technology knowledge and skills that employers are demanding by examining the content of current job advertisements. The study identified changes in demand for knowledge and skills in hardware, software, and development methodologies. The authors revealed a decrease in the demand for hardware knowledge and an increased demand for software knowledge especially related to web based technologies, like those supported in the OEIS curricula, and weak demand in traditional 2nd and 3rd generation programming languages, which are not included in end-user computing curricula such the OEIS Model.

Within the corporate environment, MIS (i.e., corporate computing) and OEIS (i.e. end-user computing) have been converging over time, yet there continues to be important distinctions between these two areas in most organizations based on who controls it and the nature of the problem structure (Regan, 1996). Henry and Cassidy (1993) call attention to the proliferation of end-user computing. Although there has been an increasing demand for new systems development and maintenance or enhancement to ongoing systems, end-user computing has been a major factor in reducing requests for computer support from the MIS department. Overall information productivity has increased in many organizations as the end-user took responsibility for developing and implementing new systems to provided needed information.

Roth and Duclos (1995) found that recent business graduates in entry-level positions offer strong pleas for increased IS education and better IS integration throughout the business curriculum. IS discipline-specific information skills are important for the business professionals in their respective disciplines (Zhao, 1997). Blanton & Schambach (1993) point out that knowledge of IT is inherently interdisciplinary and computer literacy is accepted as a required competence of a modern business person. Designers of IS curricula should also provide a blend

of new technologies while providing sound basic training in the technologies that are currently prevalent in the work place (Athney, Plotnicki & Ballester, 1995).

Yellen (2005) also emphasizes the importance of end-user education and training, suggesting that inadequate end user training and education is a large and growing financial expense for the organization. Caputo's (2005) research echoes that of Yellen, sampling of more than 100 corporate practitioners in widely varied roles within the Information Technology spectrum regarding the changing requirements related to business information technology competencies. Caputo's findings reveal that a clear and consistent growth pattern emerges for the following competency areas which include: network administration, windows development, database systems, project management, and business intelligence. All of these competencies are housed in one or more modules of the OEIS Model with the exception of business intelligence which is becoming a potential area of study that would be of major value in corporate America today.

OEIS Curriculum Model

The Organizational Systems Research Association's OEIS curriculum model (see Figure 1) was revised with the goal of meeting these criticisms, being broad enough to satisfy business needs across a large population. OEIS was originally defined by a 1993 OSRA study as the application of information technologies that support work processes and employee performance in office work environments with the goal of improving overall organizational effectiveness in direct support of business goals and strategies. Although advisory boards are used by the university to assess curriculum needs for the business world, attempting to erase another criticism, they may not provide an appropriate cross-section which have generalizabilty across multiple industries and business needs. The current authors were hopeful to tackle this lack of

communication by assessing the perception of the OEIS curriculum from information systems faculty across the United States.

The OEIS curriculum model guides educators who plan programs to prepare four-year college graduates for entry-level positions that support end-user computing through analysis, design, implementation, and evaluation of information technology. Designed as either an option under information systems programs or a stand-alone business program, the model stresses communication, business process analysis, human factors, and training. The model recommends these areas in addition to technical content and business administration fundamentals necessary for functioning in positions related to end-user support. The standard common body of knowledge courses typically required by colleges of business, including an introduction to computer information systems and a business communication course, are assumed (Hunt, Ray, & Eckholdt, 1997).

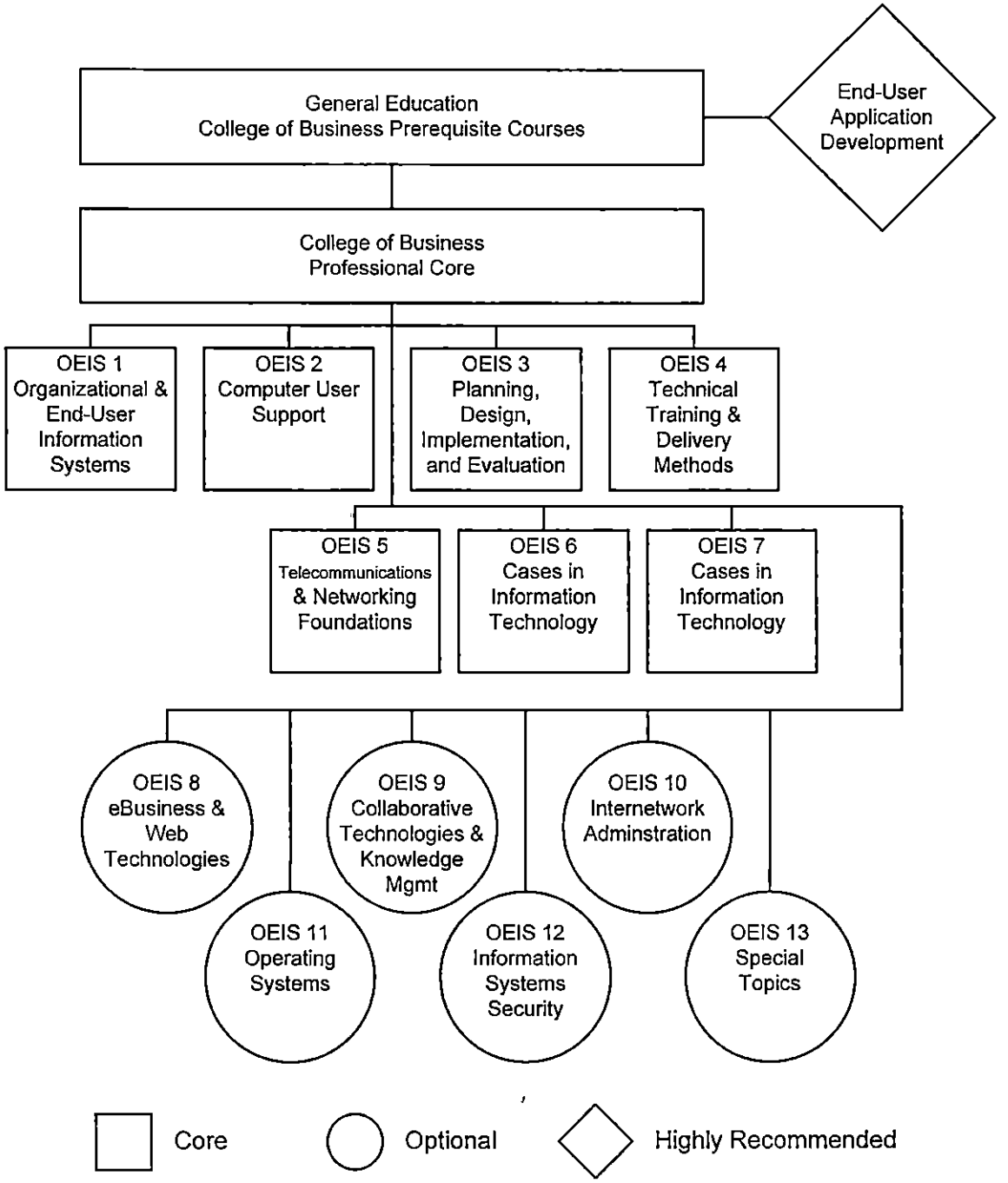

Figure 1. 2004 Organizational & End-user Information Systems Model Curriculum

Today's college graduates have received more computing knowledge than ever. Already computer literate, IS graduates may require more time spent on other aspects (oral and written communication skills, analytical skills, and content knowledge). The OEIS model attempts to

place skill and theory in action (e.g., case studies; planning, design, implementation, and evaluation; technical training and delivery methods) (Jiang, Udeh, & Hayajneh,1994). Cappel (2002) gathered suggestions from IT managers for IS majors; the top responses suggested that students get experience (e.g., internships, co-ops assignments, class projects), develop a range of skills, and set realistic career expectations.

The great diversity in the IS job market make necessary a diverse program (Maier, Greer, & Clark, 2002). The OEIS meets each of these concerns from the perspective of the practitioner. OEIS is characterized by its variety, flexibility, quick response, and informality, often working in congruence with enterprise-wide databases and transaction processing systems (i.e. payroll, accounting, insurance application, claims process, and reservation systems) (Regan, 1996). The model's structure is a set of thirteen courses comprised of core courses (essential content), optional courses (determined by local needs analyses and program maturity), and highly recommended support courses. The 2004 published model identifies outcomes (objectives), content, an approach to teaching, and resources for each course. The model's developers stressed the need for flexibility in applying the model and the need to emphasize program outcomes more than eleven courses. The OEIS general objectives provide an overview of the proposed curriculum outcomes (see Figure 2).

The OEIS general objectives are designed to prepare graduates of four-year collegiate programs for entry-level positions that involve the analysis, design, implementation, and evaluation of information technologies. It should provide the foundation essential for progress in an information technology career path-- business, industry, government, or educational settings are prepared to:

- assess the needs of employees in a variety of business functions and recommend information systems solutions to improve performance
- assess the need for, design, implement, and evaluate information systems for the desktop computing environment
- assess the need for, design, implement, and evaluate training programs for non-technical personal (end-users)
- assess the need for, design, implement, and evaluate networks
- assess the need for, design, implement, and evaluate software solutions
- select and apply project management methodologies

(Excerpt from Organizational & End User Information Systems Model, 2004, p.2)

Figure 2. OEIS Curriculum Model Curriculum-General Objectives

To further emphasize the importance of the OEIS Model, Smith, Hunt, Berry and Hunt (2005) recently developed the Management, Technology, and Communication (MTC) triad baseline model for training knowledge workers in a digital economy. This model not only complements and but also reinforces the essential objectives and recommended competencies housed in the Organizational Systems Research Association's (OSRA) newly designed 2004 OEIS Model Curriculum. The MTC baseline represents a learning environment wherein the ultimate objective is to provide OEIS students with systemic skills so they know how to manage, communicate, and implement effective technological solutions in a global marketplace. One may enter the model from any direction, and one can easily move to any other component without leaving the structure. Such an organic interconnected model reflects a college setting where OEIS students, may be simultaneously engaged in different courses in diverse departments. The authors establish a strong case of the need for an organizational environment where hard skills are paired with soft skills, where qualitative research is seen as having as much intrinsic value as quantitative research, where creative thinking along with critical thinking should be encouraged in OEIS program.

Problem and Purpose

Because of the direct relationship between end-user information systems and MIS, the researchers sought to probe the perceptions of those in the Association of Information Systems (AIS) faculty membership and job placement who had either listed end-user computing and/or microcomputer applications as their teaching or research interest area. The research was an assessment and validation of the importance of the newly designed Organizational and End-user

Information Systems (OEIS) Model Curriculum objectives based upon the perceptions of this AIS stratified sample. Even though the curriculum has been developed and approved by the sponsoring organization, an inadequate research base existed regarding the perceptions of the potential adopters. Moreover, to date there has been no current research conducted to judge its potential for implementation at the undergraduate level. Specifically, the purposes of the study were (a) to assess the level of importance of the OEIS Model Curriculum content and (b) to determine the current availability of OEIS course offerings at selected colleges and universities. The research study sought answers to the following questions:

1. Does congruence exist among AIS faculty who have a strong interest in end-user information systems, regarding the level of importance of the model curriculum?
2. What is the current status of OEIS course offerings at the colleges and universities wherein the MIS faculty currently teach?
3. What is the current potential for implementation of an OEIS undergraduate curriculum in IT education at the respondent's institution?

RESEARCH DESIGN & METHODOLOGY

The following procedures were used to conduct the study:

- Reviewed related research and curriculum literature in this area of concentration.
- Selected the faculty population and developed a stratified sample of the MIS faculty population based upon teaching and research interests in this specialization.
- Identified and classified the components which comprise the content of the courses in the OEIS model curriculum (See Appendix A).
- Established content validity by submitting the components to a panel of experts composed of IT educators and practitioners—all members of the OEIS curriculum group.

- Formulated a web-based questionnaire (using Facilitate.com) survey tools to electronically collect MIS faculty perceptions regarding the OEIS Model Curriculum.

The finite population for the study consisted of 274 AIS faculty email addresses of academicians who had noted end-user computing as a teaching and/or area of research interest in the AIS Job Placement for 2004 or had listed this area of interest in the AIS membership profile. Of the 274 emails that were sent, 83 were returned as undeliverable, making for a total of 191 submissions. Of the 191 submissions, 42 (or 22%) usable survey responses were received. The data gathered included demographic profile data, assessment of the OEIS curriculum objectives, and current status of OEIS course offerings.

The demographic institutional and faulty profile is shown in Table 1. Responses from MIS educators revealed that 87.8% of the faculty is from public universities. A majority (82.9%) of the institutions and faculty are affiliated or closely allied with a school/college of business. In 70.7% of the institutions, the OEIS component is staffed by 10 or more faculty members. Approximately 41.5% of the respondents have 16 or more years of teaching experience. The largest concentration of institutions (31.7%) has student enrollments of more than 20,000 students. The majority of the faculty (63.4%) indicated than an OEIS curriculum either currently exists or the institution is in the process of implementing this type of concentration within their respective college/university.

Table 1. *Demographic Institutional and Faculty Profile*

Questions	Items	Count	Percent
Location within Institution:	College of Business	34	82.9%
	College of IT	2	4.9%
	College of Science	2	4.9%
	Other	3	7.3%
Location of Responding Institution by geographic	Northwestern US	2	4.9%
	Southwestern US	11	26.8%

association:	Northeastern US	9	22.0%
	Southeastern US	16	39.0%
	Outside US	3	7.3%
Classification of Institution:	Public College/University	36	87.8%
	Private College/University	4	9.8%
	Other	1	2.4%
Number of Full-Time Faculty in the Department:	3 or Fewer	1	2.4%
	4-6	4	9.8%
	7-9	7	17.1%
	10 or more	29	70.7%
Total Number Years of Teaching Experience:	1-5	11	26.8%
	6-10	7	17.1%
	11-15	6	14.6%
	16 or more	17	41.5%
Total Institution Enrollment:	Less than 5,000	5	12.2%
	5,000-9,999	8	19.5%
	10,000-14,999	7	17.1%
	15,000-19,999	8	19.5%
	20,000 or more	13	31.7%
Accreditation status of your IT program:	ABET	0	0%
	AACSB	27	65.9%
	ABET & AACSB	2	4.9%
	Other Accreditation	7	17.1%
	Not Accredited	5	12.2%
Current existence or potential for implementation of OEIS/IT undergraduate program at respondent's institution	Planning Stages	2	4.9%
	Currently Implementing	5	12.2%
	Already Implemented	19	46.3%
	No intention to Implement	15	36.6%

In addition to a demographic profile of the MIS faculty, the web-based research instrument was designed to ascertain MIS educator perceptions regarding the specific objectives of the curriculum. Respondents were asked to evaluate the level of importance of the 50 components that had been developed by the researchers and validated by the panel of experts. Each component was evaluated on the following five-point scale: 5= of extreme importance, 4-of considerable importance, 3=of some importance, 2=of little importance, and 1=of no importance.

The researchers established a mean response of 3.5 as an indicator of agreement among IT educators as to the level of importance of the OEIS curriculum. An additional section of the web-based questionnaire queried faculty responses regarding the availability of OEIS courses in their respective institutions.

The objectives for the twelve of the thirteen courses in the OEIS curriculum model provide the bases for the instrument developed to seek the opinions of information technology faculty perceptions regarding the curriculum. Only twelve courses are examined due to the all-encompassing nature of the special topics course.

DATA ANALYSES AND RESULTS

The survey results indicated that the average information systems program already offers 6.6 of the 12 OEIS curriculum courses. The average program plans on adding on average 2.2 more. Of the courses not currently implemented, the ones for which implementation is most often planned are:

- OEIS-12 Information Systems Security,
- OEIS-06 Cases in Information Technology, and
- OEIS-09 Collaborative Technologies and Knowledge Management

On average, there are no plans to offer 5.1 of the OEIS curriculum courses. The least frequently implemented courses are shown below.

- OEIS-04 Technical Training and Delivery Methods, and
- OEIS-02 Computer User Support

The course topics were generally rated high, with a high of 4.21 for OEIS-01 Organizational and End-user Information Systems related content, a low of 3.53 for OEIS-10 Network Administration course related content , and an overall average on all objectives of **3.91** (as shown in Appendix A) which was indicative of considerable importance. The high average bias shows that the OEIS curriculum blankets the important areas of study rather well and that it closely and authoritatively represents what should be covered. Also noteworthy is the fact that information systems security, collaborative technologies, and knowledge management were perceived as highly important in content coverage given the paradigm changes in our digital

economy. IT faculty indicated that the technical training, even though important, was of lesser importance than some of the objectives that related directly to end-user support.

Table 2 depicts the course offering gaps in the curriculum. The course offering gap is the difference between the scaled average course importance, and the frequency with which the course is offered or is planned to be offered. To avoid respondent bias, the respondents were asked to rate the importance of a specific objective on a 5-point Likert scale without referencing any specific course module. The researchers later obtained a scaled average rated importance by linking each specific objective with the course module wherein that objective is most often presented. There were no meaningful correlations between the actual importance of a course as measured by how frequently it is offered (-0.040), is planned to be offered (0.089), or is not offered (0.007), and how highly the topics that constitute that course were rated in term of their perceived importance.

Table 2. *Course Offering Gaps*

Course	Description	Plans	Offers	Offers + Plans	Avg. Rated Importance	Scales Avg. Importance	Offering Gap
(a)	(b)	(c)	(d)	(e) = (c)+(d)	(f)	(g)	(h) = (g)- (e)
OEIS-04	Technical Training and Delivery Methods	2	10	12	4.0	33	**21**
OEIS-02	Computer User Support	3	13	16	3.8	32	**16**
OEIS-01	Organizational and End-user Information Systems	1	22	23	4.2	35	**12**
OEIS-09	Collaborative Technologies and Knowledge Management	6	16	22	3.8	32	**10**
OEIS-06	Cases in Information Technology	8	17	25	4.1	34	**9**
OEIS-11	Operating Systems	1	20	21	3.6	30	**9**
OEIS-03	Assessment, Design, Implementation, and Evaluation	4	25	29	4.2	35	**6**
OEIS-12	Information	11	15	26	3.9	33	**7**

	Systems Security						
OEIS-10	Network Administration	4	23	27	3.5	29	**2**
OEIS-07	Internship	2	29	31	4.0	33	**2**
OEIS-05	Telecommunications and Networking Foundations	3	34	37	3.9	32	**-5**
OEIS-08	eBusiness and Web Technologies	3	35	38	3.9	32	**-6**
Correlation		**0.089**	**-.040**				

As shown in Table 2, the courses that are most often ignored are OEIS-04, Technical Training and Delivery Methods, and OEIS-02 Computer User Support. It is interesting to see the low ratings for OEIS-04 and OEIS-02—given that these areas are very important for any type of information systems software or hardware implementation. Both have large course offering gap ratings, 21 and 16, respectively. Conversely, a negative number means the course is over-represented relative to the perceived importance rating of the topics it addresses. This is the case with OEIS-05 Telecommunications and Networking Foundations, and OEIS-08 eBusiness and Web Technologies, two older and widely implemented more technical courses. The finding that the more people-oriented courses OEIS-04 and OEIS-02 are being overlooked, when the more technical courses OEIS-05 and OEIS-08 are being strongly supported, is an important finding of the study. Figure 3 compares the course offering frequency with the scaled average rated course importance.

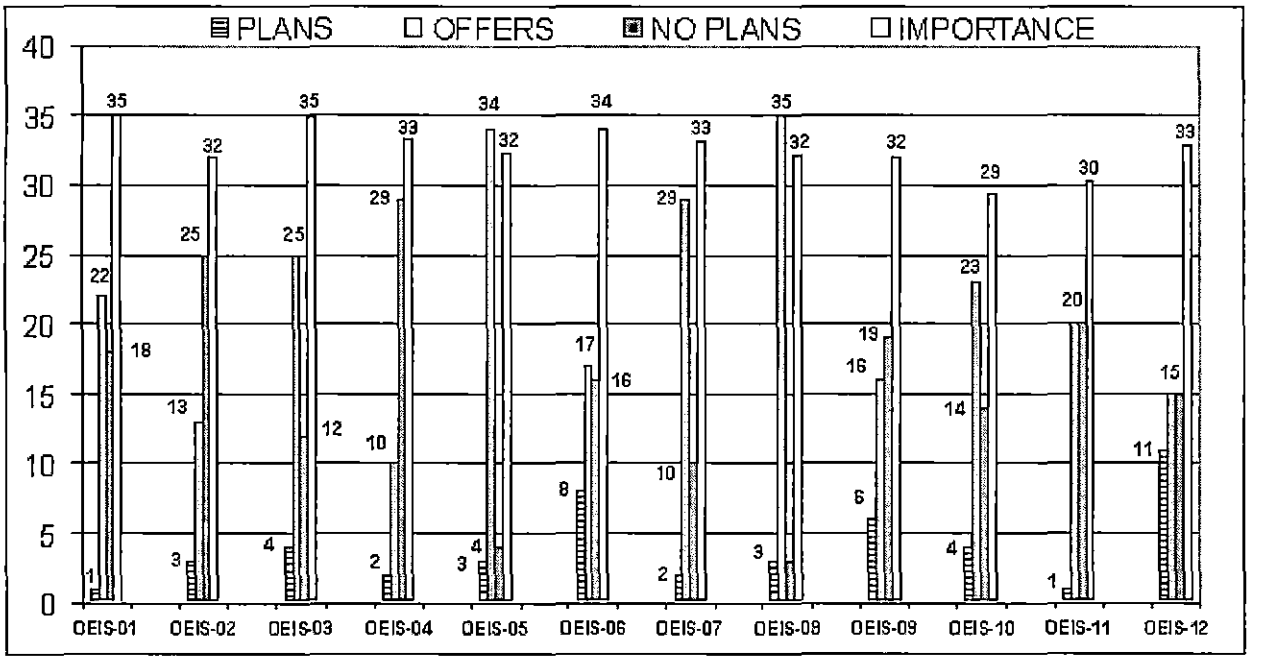

Figure 3. Course Offering Frequency Compared To Scaled Rated Importance

The small sample size has constrained the statistical analysis. Although the response rate was high (41 replies out of 191+ mailings, or about 22 %), we are still rather limited in our statistical analysis because of the small sample size (n = 41) relative to the complexity and interdependencies of the issues addressed.

Other analyses such as ANOVA or factor analysis were not conducted due to the small sample size. Means tests such as student t, and related confidence intervals as a measure of error, are also not appropriate because the assumption of normality is not met, and the sample is biased. As shown in Appendix A, the average mean score of the responses was 3.91 for topic significance, and the lowest average was 3.4, when in a normal sample distribution the average of the responses should have been 3.0 with a low and highs fairly close to 1 and 5. The bias is expected due to the fact that the topics and courses listed are all important at some level to the OEIS curriculum. The high average bias solidifies and supports the position that the OEIS

curriculum blankets the important areas of study rather well and closely represents what should be covered.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

MIS academicians have shown that the OEIS curriculum designers and the associated content objectives of the 2004 OEIS Curriculum Model do indeed have value and is of considerable importance. In addition to its importance, the faculty validated and solidified that the curriculum does have merit in preparing OEIS undergraduate students for participation, as end user support personnel, in a digital, knowledge-based economy of unbridled change. The implications are especially important for colleges and universities that have adopted only portions of the model's content. Educators should keep in mind that the faculty respondents were evaluating objectives and outcomes, not courses. In cases where the implementation of entire courses are not possible, educators should consider incorporating content related to the highest-rated objectives into existing IS courses.

Educators whose programs do not include an internship should consider adding such an experiential learning arrangement. Educators whose programs already include an internship experience should assess the nature of internship experience to determine if such experiences are related to end-user information systems in some way.

To supplement and validate the findings of this study, further research by other stakeholders is essential. Investigation and assessment of the extent to which individual programs are meeting program objectives is also needed. The success rate of OEIS graduates in the workforce will be determined by the extent to which program objectives are being met. In summary, OEIS educator's credibility in the private sector is solidified by the caliber of student that the employers recruit and hire in today's global companies. Consequently, a continual

stream of research on trends and issues in end-user information systems would provide a further knowledge base and framework for designing future curricula. Moreover, to ensure that the curriculum content maintains relevance and currency, it is imperative that an ongoing review be conducted by the OSRA board or a designated committee comprised of both IT practitioners and academicians. Lastly, given the importance of these validated objectives, our doctoral granting universities must continue to implement graduate-level courses that will assist IT educators in the preparation of knowledge workers and end-user support personnel.

With this available research base, MIS educators have a validated framework and guide for implementation of a track or emphasis in end-user information systems at the undergraduate level. To enhance these programmatic efforts, institutions of higher learning must ensure that avenues are made available for professional development in this area. What educators do to facilitate the implementation process (at each institutional level) will be the practical application of this research process. Collaboration of all those involved with end-user information systems will help achieve this goal.

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APPENDIX A

Mean Scores of MIS Faculty Perceptions Regarding Level of the OEIS Specific Objectives (5 = extreme importance, 4 = considerable importance, 3 = some importance, 2 = little importance, 1 = no importance)

OEIS Objectives in the Model Curriculum	Mean Score	Std Dev	N
Identify human factor issues associated with the use of OEIS technologies.	4.4	0.9	41
Identify project objectives and end-user requirements.	4.4	0.7	41
Articulate the relationships among various end-user information systems from both business and technical perspectives.	4.3	0.7	41
Describe characteristics of end-user work environments and the impact of information technology on work performance.	4.3	0.7	41
Assess user needs and recommend computer solutions.	4.3	0.7	41
Identify organizational and management issues related to the use of technology in the workplace.	4.3	0.8	41
Evaluate alternative solutions from both the end-user and technical perspectives.	4.3	0.7	41
Understand global and ethical issues as related to end user information systems.	4.3	0.8	41
Consider the need for, and analyze the impact of, information systems security in the daily functioning of organizations.	4.2	0.9	41
Explain how systems concepts can be applied to the planning and implementation of end-user support systems.	4.2	0.8	41
Apply project management methodology and tools to the development of a EUIS systems analysis and design project.	4.2	0.8	41
Describe the concept of end-user technology support and differentiate possible approaches for providing such support to end users.	4.1	0.8	41
Defend the selected solution in the context of real-world business problems.	4.1	0.8	41
Be able to undertake a basic review of the information security practices, techniques, and methods being used to secure an organization's information assets.	4.1	0.9	41
Justify the desirability of strategic planning and how EUIS solutions can drive organizational goals.	4.1	0.8	41
Reporting and documenting activities via oral presentation and supporting multimedia.	4.0	0.9	41
Install, configure, upgrade, and maintain software.	4.0	1.0	41
Design cost-effective technical training including new training and upgraded training.	4.0	1.0	41
Understand the context of Internet processes within the overall functioning of global organizations.	4.0	0.8	41

Discuss effective applications of emerging communication technologies.	4.0	0.8	40
Complete an internship to demonstrate readiness for entry-level employment in an IT-related position.	4.0	1.0	39
Understand and apply the concepts and theories underlying the administration of information systems security.	3.9	1.0	41
Recognize the value of virtual collaborative web-based groupware tools.	3.9	0.9	40
Examine and use current methodologies for the design, implementation, and monitoring of secure information systems.	3.9	0.9	41
Recognize and apply appropriate web design techniques to meet user requirements.	3.9	0.9	40
Identify problems and formulate solutions related to telecommunications and networking.	3.9	0.8	41
Develop sufficient technical expertise to create informative web pages.	3.8	0.9	41
Demonstrate an understanding of the vocabulary and theory of telecommunications and networking.	3.8	0.8	41
Investigate key functional aspects of web-based applications.	3.8	0.9	41
Demonstrate an understanding of software system maintenance, upgrading, and troubleshooting.	3.8	1.1	41
Apply qualitative and quantitative methods of analysis through case studies.	3.8	1.0	39
Identify and prescribe solutions for commonly occurring Helpdesk end-user problems.	3.7	0.9	41
Set up, install, configure and troubleshoot hardware.	3.7	1.1	41
Evaluate alternate Internet based business models and strategies for e-commerce, i.e., Virtual Store Fronts,Enterprise Content Providers.	3.7	0.9	41
Set up, perform, and verify disk, directory, and file backups.	3.7	1.2	41
Implement and use group support systems for managing knowledge in contemporary organizations.	3.7	0.9	41
Develop course delivery systems for training end-users.	3.6	0.9	41
Create workplace design solutions to ensure worker comfort, safety, and productivity.	3.6	1.0	41
Recommend learning and performance measures for the selected training type.	3.6	1.0	41
Define Knowledge Management in terms of its strategies, properties, resources, and outcomes.	3.6	0.9	41
Function as an entry-level facilitator and team leader in a collaborative technology setting.	3.6	1.0	41
Demonstrate the use and understanding of different operating system platforms--Windows, Unix, and Macintosh.	3.6	1.0	41
Demonstrate an understanding of operating system installation, patching, and upgrading.	3.6	1.1	41

Understand the prevalent models for developing technical training.	3.5	0.9	39
Acquire web page authoring skills using currently popular web editor tools.	3.5	0.9	41
Assign users to groups while ensuring adequate security permissions on the network.	3.5	0.9	41
Manage, configure, and troubleshoot networked software connections.	3.5	1.1	41
Develop a systematic implementation and evaluation plan for Knowledge Management in a realistic organizational environment.	3.4	1.0	41
Write and evaluate reports generated through multiple Helpdesk reporting solutions.	3.4	0.9	41
Implement, monitor, and troubleshoot basic digital security certificates and encryption keys.	3.4	1.0	41
Overall Average Level of Importance	**3.91**		