An Integrated IT Curriculum Model for Advancing Education in Information Technologies, Learning, and Performance

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This article's objective is to create a better understanding of the need for developing an IT environment in Organizational & End-user Information Systems' (OEIS) programs of study wherein hard skills are paired with soft skills, where qualitative research has as much intrinsic value as quantitative research, and where creative thinking and critical thinking is encouraged. To this end, we have developed the Management, Technology, and Communication (MTC) Model for Training Knowledge Workers in a Digital Economy. This model complements and reinforces the essential objectives and recommended competencies housed in the Organizational Systems Research Association's (OSRA) newly designed 2004 OEIS Model Curriculum.

Across the red blood-like cover of a 2004 *Wired* magazine, written large in shades of white innocence, are the words, "The Making of a Human Clone." This juxtaposition of color, words, and content leads one to reflect on the interaction between technology and humans. While technology plays an increasing role in today's global economy, all too often, the importance of the human factor is overlooked. Yet, the current outsourcing phenomenon illustrates the need for a paradigm change that calls for organizations and end-users to engage in creative problem solving in a radically transformed business world that focuses more on the human element.

Literature Review

This literature review presents an overview of the need for a new systemic model of training knowledge workers so that students can synthesize managerial, technical, and communication (MTC) skills. The *MTC Model for Training Knowledge Workers in a Digital Economy* demonstrates that these skills as a system, not as silo components, can prepare students for the changing business landscape. As background for the MTC model, this critique of the literature examines the human factor via the dichotomies and merits of (a) soft skills vs. hard skills; (b) quantitative vs. qualitative methodologies; and (c) critical thinking vs. creative thought. The model suggests the need to focus on a holistic approach that incorporates

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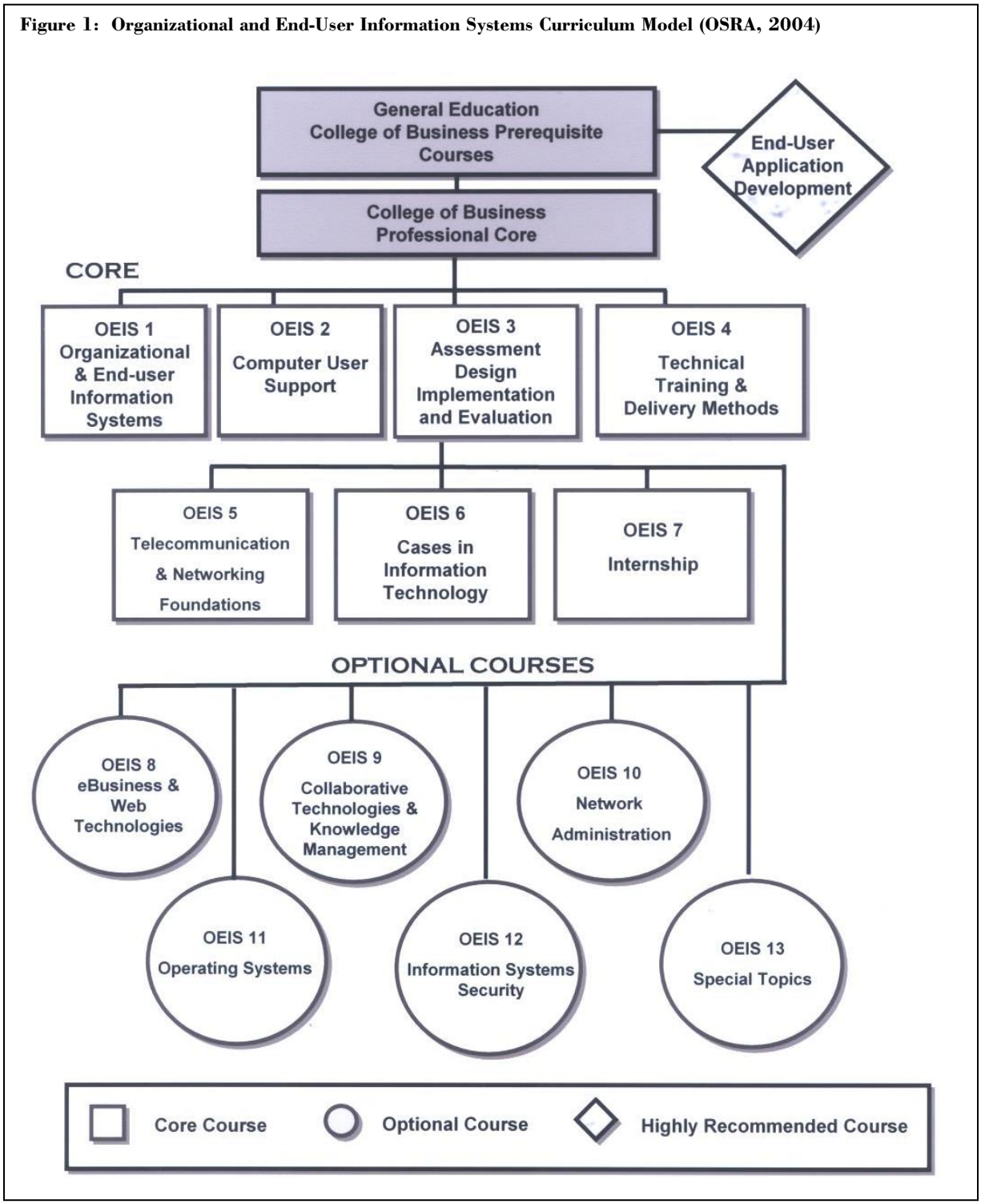
people, machines, and management methods. Moreover, the model complements and reinforces the Organizational System Research Association's (2004) newly designed Organizational & End-user Information Systems (OEIS) Model Curriculum. See Figure 1.

THE TECHNICAL/HUMAN INTERFACE

We live in a complex, interconnected, and interdependent global village where everything systemically interacts with everything else and technical and human aspects of all problems are

Figure 1: Organizational and End-User Information Systems Curriculum Model (OSRA, 2004)



interwoven. The global economist, Jeffrey Sachs, insists the only way to solve current world economic problems is via an interdisciplinary approach (Davidson & Goldberg, 2004). Sachs proposes a rethinking of the nature of the human factor and the global effects of economic change, precisely because of rapid developments in science and technologies. Without the human element, "technology has no point of social reference" (p. B9). The human factor promotes the social literacy to comprehend both cultural and technological values.

This literature critique and subsequent discussion of the MTC model (shown in Figure 2) demonstrate why knowledge workers must know how to interact and develop synergies with other people, as well as how to utilize technologies to create innovative environments. A combination of technical prowess with human imagination and emotion must coexist to create a paradigm shift for this new economy. An Information Technology (IT) leader in the new socio-economic global market has the task of creating a "true whole that is larger than the sum of its parts; a production entity that turns out more than the sum of the resources put into it" (Drucker, 1954, p. 354). The task of a manager is to set the internal environment of activities wherein subcategories provide details necessary for daily operations that are aligned with organizational strategies.

Soft Skills vs. Hard Skills

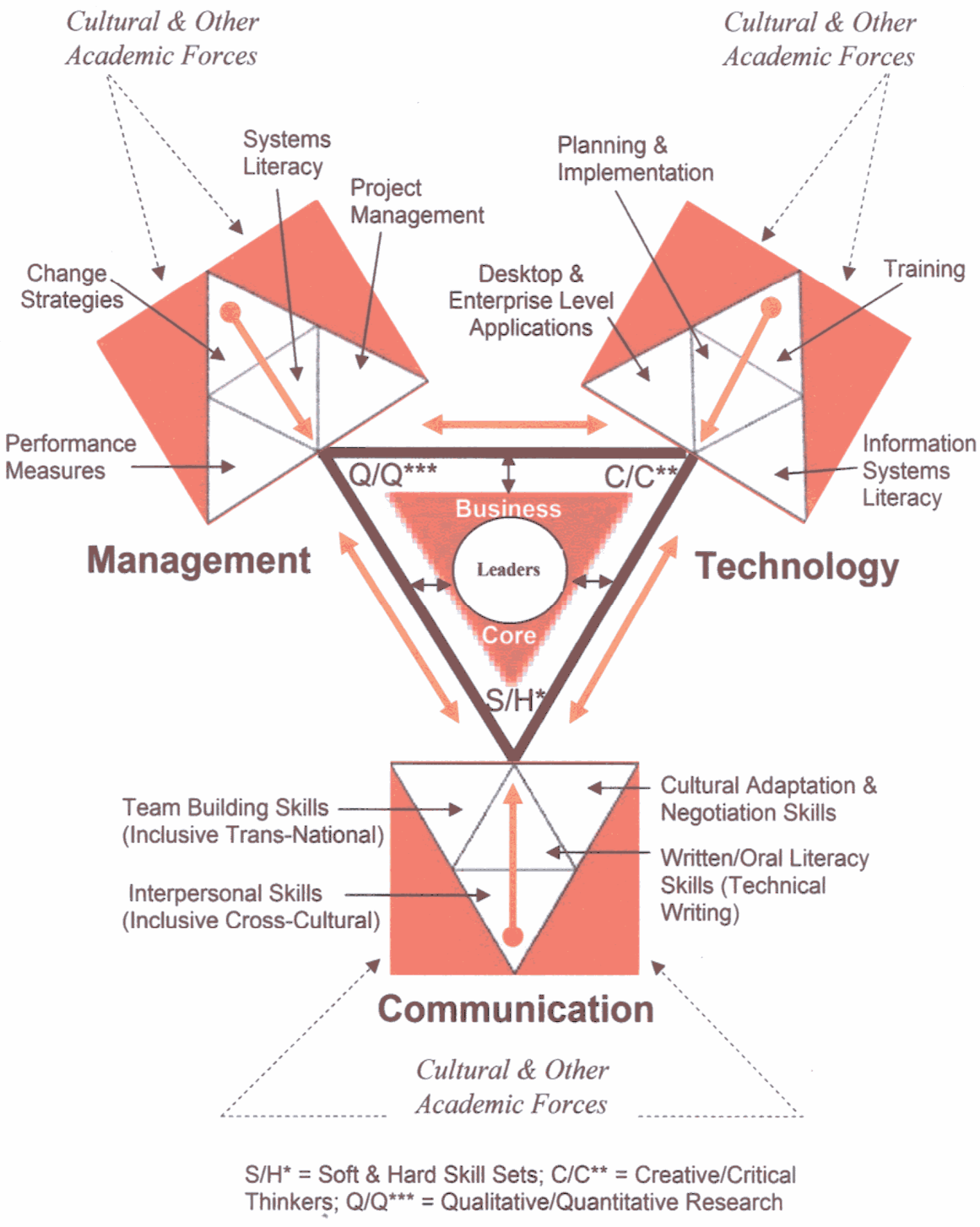
The strategic/technical and communication/ personal sides of business are sometimes called, respectively, 'hard" and "soft" skills. Statistical knowledge is classified as hard because facts are hard, whereas soft skills involve the hypothetical "what ifs?" When speaking about expertise needed in business organizations, Koestenbaum (2002) noted that the terms, "hard" and "soft" skills, are misnomers. "Paradoxical as it may seem, the personal precedes the strategic" (p. 8). "It is a hard fact that effective management must understand the soft center in every person" (p. 121).

Historically, soft skills have not received the same respect as technical skills because of the misconception that they are easy to acquire and easy to use. In reality, it is quite the opposite. Unlike hard skills that can be more often "nailed down" to formulas and facts, the wisdom one needs to negotiate sensitive issues cannot be condensed into a formula to be memorized and then routinely applied. Managing within various environments must be reformulated every time the cultural context changes. As with other business disciplines, IS is not a stand-alone area, but one which supports the purposes of the other functional areas and, thus, demands good interaction (soft skills) in addition to the appropriate technical knowledge.

Howard Strauss (2003), manager of Technology Strategy and Outreach at Princeton University, observed that "Time spent on improving communication will have a bigger impact than anything we can do with technology gadgets" (p. 42). In 1996, McGee noted that 68% of Communication Information Officers (CIOs) said that soft skills, or skills of a non-technical nature, such as communication and team building, are more important today than five years ago. Van Slyke, Kittner, and Cheney's 1998 report about the Information System (IS) industry noted that because of the diversification of IS positions, soft skills apply to virtually every IS job. In 2002, Cappel conducted a study concerning entry-level IS job skills and the ability to succeed on the job. "Overall, employers rated non-technical skills even higher than technical skills" (p. 81). The highest rated skills or abilities were the ability to learn, teamwork, problem solving, written communication, and oral communication.

An IS executive focus group, conducted at Morehead State University in 2003, paralleled Cappel's findings. Lewis (2003) noted that "technical skills are great, but knowing when to act on opportunity is even more important. You have to be able to walk into an IT environment and sell your ideas . . . If you can't work on a team, you're not going anywhere" (p. 2). These IS administrators concluded that academic environments need to give IS students the bigger picture in order to problem solve and put ever-changing puzzles together. They also agreed that academicians need to promote thought—how to

Figure 2: Management, Technology, and Communication (MTC) Triad Baseline Model for Training Knowledge Workers in a Digital Economy (Smith, Hunt, Berry, & Hunt, 2005)



write, how to organize, and, more importantly, how to present material orally. Additionally, being an effective communicator involves being aware of how technology affects communication and how communication technologies are important for creating and sharing knowledge.

From the quantitative and qualitative data reported here, one recognizes that persons with poor interpersonal skills cannot be effective knowledge developers. "Their deficiency [sic] cannot help but detract from their relationships with experts, users, management, and others" (Awad & Ghaziri, 2004, p. 208). Educators must see that human communication skills should be viewed as important ingredients for successfully operating within a highly technical environment. We believe the newly revised OEIS curriculum (see Figure 1) provides opportunities to incorporate more communication skills through case studies and analysis and design activities.

Upon examination of the MTC inter-relational model (Figure 2), it is obvious the foundation is based on effective communication and that communication takes place within a global context. Technological advances in travel and telecommunications have increasingly internationalized business and all other entities. *Business Week* reported that two-thirds of all industries either already operate globally or are in the process of doing so (Edmondson, 2000). Students must be prepared for this cross-cultural, trans-national environment, because communication challenges, such as negotiation and mediation, increase nonlinearly for people conversing across cultures and countries. Furthermore, the dynamics of cultural adjustment calls for a need to "develop effective strategies to adapt to others who are different from ourselves" (Beebe, Beebe, & Ivy, 2001, p. 161). Such is the challenge of the global marketplace where soft and hard skills are equally needed if students are to become leaders. In the MTC model, these skills are both an outcome of the communication component, as well as an organic element at the center of this inter-disciplinary model.

Qualitative vs. Quantitative

Traditionally, there has been a heavy emphasis on quantification in the sciences, such as mathematics, physics and chemistry. Recently, however, strong counter pressures against quantification have emerged and there has been a movement to "question the very assumptions on which the putative superiority of quantification has been based" (Guba & Lincoln, 1994, p. 106). "Logical thinking may find out the best way of putting together A, B, and C, but it will not discover that A, B, and C are inappropriate units anyway" (De Bono, 1969, p. 228).

Quantitative studies emphasize the measurement, analysis, and testing of causal relationships between variables, not processes, while qualitative research methods reflect an attempt to secure an in-depth understanding of the phenomenon in question and are based on building a complex, holistic, and detailed picture formed with words. Patton (1990) deemed that a skilled researcher can successfully combine approaches—that quantitative and qualitative research can be complementary, rather than rival, designs. For example, quantitative and qualitative approaches are like anatomical human components—the skeleton and the muscles—neither is much good without the other. Unless there is a skeleton, on which to pull, muscles are of little use. Quantitative methods are like a skeleton, while qualitative methods are the muscles that move bones into the desired position to support and to move the "body" of business.

Over the past three decades, a substantial methodological change in using qualitative approaches in business schools has evolved, especially given the case study approach pioneered at the Harvard Business School. With the case study technique, management has been provided with a means of investigating knowledge about human action and activities in organizations and intercultural activities that are much more systemic in nature. A number of OEIS programs do infuse case study reading so that students will

be able to devise rules for decision making when they encounter similar problems in a real-world environment. Unfortunately, this change has not yet been substantially implemented at the undergraduate level in terms of teaching a qualitative/quantitative methodology that emphasizes a systemic thinking approach. We contend that such an approach is necessary for the new global economy. Educators must move students beyond being "button savvy." The new OEIS Model provides this platform at the senior level in the Cases in Information Technology course module.

Pink (2005) notes that while the ability to acquire and to apply theoretical and analytical knowledge (logical and precise, left-brain thinking) gave rise to the Information Age and to the success of knowledge workers, such as tax attorneys, radiologists, financial experts, software engineers, etc., technology is changing the need for those careers. Pink contends that computers can now outperform human left brains and "execute sequential, reductive computational work better, faster, and more accurately than even those with the highest IQs" (p. 71). He suggests that society has arrived at the dawn of a new era, where knowledge workers are evolving to creators and empathizers, pattern recognizers, and meaning makers. Pink further suggests that a pressing need exists to prepare workers for a "Conceptual Age" ruled by right-brain qualitative reasoning (artistry, empathy, and emotion), if students are to retain a competitive advantage in the global marketplace.

The MTC model (Figure 2) assumes that no single discipline holds a monopoly on where one learns quantitative and/or qualitative skills. Qualitative narrative inquiry may be taught in a variety of disciplines (such as business communications, finance, information systems, and management) using case studies. Similarly, quantitative studies are not the sole responsibility of any one discipline within business schools and may be taught in service areas (math, science, etc.). However, the MTC model does assume these skills are essential to producing IT leaders capable of coping with massive change in a complex international technological setting. As such, the MTC model approach would better equip students to investigate a problem, and to deliver a solution that ties the technical, organizational, and human elements all together (another goal of the 2004 OEIS Model Curriculum).

Critical vs. Creative Thinking

Bailin (1994) noted that critical thinking (hard statistical knowledge) and creative thinking (hypothetical "what ifs") tend to be viewed as distinct from and even opposed to one another. Quantitative research is a framework with known limits, where all necessary information is given or assumed, and the mode of thinking required is analytic and evaluative involving judgments "made almost mechanically" (Bailin, 1987, p. 25). Yet, when one works in the qualitative framework, one comes to understand that fuzzy boundaries predominate, that in actuality there are only a very limited number of cases in which entities operate within clear-cut, clearly determined, and rigidly bounded frameworks. In most situations, frameworks overlap, shift, and have indefinite boundaries. Most disciplines are open-ended and dynamic. "They involve not merely information, but also live questions (interactions) and modes of investigating these questions" (p. 26).

Bailin argued that critical thinking and creative thinking are not distinct and opposite kinds of thinking. Rather, they represent emphases along a continuum of good thinking, which has both generative and evaluative dimensions. For example, Taguchi techniques of quality engineering embody both statistical process control (SPC) and new quality-related management techniques (QI2, 2001). "Due to the statistical balance of the designs, thousands of potential combinations of numerous variables (at different settings or levels) can be evaluated for the best overall combination, in a very small number of experiments" (Karbhari, 1994).

In looking at the complex business environments of today, who would not want employees to be more creative and open to change in problem-solving, while carrying out standardized work like bookkeeping? As evidenced by the outsourcing phenomenon,

individuals must move beyond reproducing commodities and services (Anderson, 2004). Individuals must respond productively to this new situation, to generate new and better solutions to problems, and to produce original works. Society must approach analytic, highly judgmental aspects of business in such a way that generates creative results, and individuals must become imaginatively inventive in being critical.

In this new work environment, many human resource managers are more frequently turning to job simulators and role-playing in interview situations to test applicant's skills for high-stress technology jobs. Recently, a Tacoma, Washington company that relies on simulations to fill all openings in its 180-person work force had an opening for a single technology job (Holt, 2005). Initially, the 152 applicants for the job had to pass a written test on technical knowledge. The top scorers then spent a half-day auditioning for the job by first solving a software support problem posed by an "irate" role player. Next, the applicants had to put together a computer. Finally, the applicants had an interview with a panel. Such simulations test both technical skills and how applicants may deal with infuriated or troubled customers, because patience and persistence in communication, as well as top technical skills, are needed. The MTC model would stress such an approach. In this inter-disciplinary model, soft skills and hard skills are both an outcome of the communication component, as well as an organic element in which the business core functions. Technical writing, which is very precise and very much a process of both analytical and conceptual thinking, is also found within the Communication component.

The MTC Model

We recognize that within the social, historical, and political framework in which all innovations operate, the immediate emphasis must be on changing attitudes and only later on changing practice or procedure. Therefore, the purpose of this article is to create a better understanding 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 is encouraged in OEIS programs. To this end, we developed the *MTC Model for Training Knowledge Workers for a Digital Economy*.

In trying to depict a college of business, with its several departments, one might be inclined to view the process as hierarchical, like a pyramid. However, we chose the inter-relational structure of the MTC model, because it more closely resembles an interactive arrangement of instruction within a college. Each department, such as Management, Information Systems, and Business Communications, is usually both detached from a college of business and part of that same infrastructure. In this model, each discipline is depicted as separate, yet totally connected to a Business Core in which soft and hard skills, qualitative and quantitative skills, and creative and critical thinking occur. This model represents a confluence of energies flowing from each of the disciplines towards a center core, much like tributaries that course into the mighty Mississippi. Once formed, it is hard to separate each molecule of water as to its origin, just as it is hard to discern if a student learned narrative and story telling either in the communication component or in the management one. The model is meant to be a baseline, rather than a model that addresses every potential situation.

The design incorporates the shape of triangles (a geometric shape often used to build bridges because of its inherent strength) and replicates that shape in multiple levels of transparency. The gray area surrounding each major triad of knowledge represents various cultural and other academic forces outside of that discipline, which also contribute to a student's overall knowledge. The model represents a learning environment in which 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 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.

COMMUNICATION COMPONENT

The foundation of the MTC model is Communication without which there can be no knowledge transmission. This component consists of the following: Written/Oral Literacy Skills (Technical Writing), Interpersonal Skills (Inclusive of Inter- & Intra- Cultural), Team Building Skills (Inclusive of Cross-Cultural and Trans-National), and Cultural Adaptation & Negotiation Skills. Communication Literacy is needed to understand how to make both oral and written messages comprehensible, credible, timely, adequate, and relevant (Andrews & Andrews, 2004) and to deliver complex information, both face-to-face and digitally, in such a way that all members of the audience can understand. Interpersonal Communication involves an awareness of oneself, the effective use of verbal and non-verbal messages, and the ability to listen carefully, as well as to respond sensitively to others by adapting to their cultural backgrounds, values, personalities, communication styles, needs, and goals. Team-Building Skills are essential because many times "success at coalition building determines whether a project starts at all" (Kanter, 1983, p. 229). Finally, Negotiation Skills are essential as conflicts occur naturally as various points of view are presented and discussed, especially when "people from different cultures often have different approaches to solving problems, setting goals, and appropriating tasks" (Andrews & Andrews, 2004, p. 1973).

MANAGEMENT COMPONENT

In the upper left corner of the model is the Management component consisting of: Systems Literacy, Change Strategies, Performance Measures, and Project Management. Of the multitude of proponents of a systems approach to understanding organizations, Deming (1994), Goldratt (1990), and Senge (1990) are among the best known. Recognizing that nothing occurs in isolation, these and other authors demonstrate the importance of a holistic study and understanding of a company. Change Strategies, such as those of Kanter (1983), Goldratt (1990), and Rogers (1995), propose an organized approach to change, first by recognizing the existing situation and then moving along the map of change in orderly, preplanned steps to increase success rates. Keeping the change on track, with specific system-oriented Performance Measures, is required to keep local actions aligned with overall organizational goals. Project Management requires an understanding of the change process and a willingness to develop and use appropriate global performance measures that align actions from organizational levels down to task levels while leading the organization toward its new destination. The project manager serves as the coordinator and involves other team members in the complex change process. Communication is key to management's success in implementing change within a system.

TECHNOLOGY COMPONENT

In the upper right corner of the MTC model is the Technology component consisting of: IS Literacy, Computer Support Systems & Telecommunications, IT Planning & Implementation, and IT Training. These components draw from the OEIS curriculum model for undergraduate education in information technology (OSRA, 2004). Information Systems Literacy provides for an "understanding of organizational and end-user information systems, technologies, business processes, and worker performance" (p. 4). This allows students to understand the changing role of systems analysts, managers, and end-users. The second component revolves around improving workplace performance and supporting core business processes by understanding requirements of the workplace and the selection of appropriate Telecommunications & Computer Support Systems hardware and software to meet performance needs, as well as applying technology to support knowledge workers in a variety of enterprises. Planning and Implementation focuses on assessment, design, implementation, and evaluation. Students need to learn methods and procedures "that empower

them to define and solve large-scale OEIS problems or address new opportunities" (p. 11) by understanding IT and planned change strategies, human factors, and job redesign. Finally, Training includes technical training and delivery methods "which are supportive of and conducive to OEIS implementation" (p. 14). Here students focus on the design, development, and delivery of technical training.

Inner Business Core and Leadership Objective

The heart of the MTC model is the innermost triangle in which lessons from disciplines mingle to produce an environment where leadership, based on solid business knowledge, flourishes. The business disciplines, i.e., accounting and finance, are represented in the model as part of this inner business core. In the MTC model, accounting and finance would still retain a predominantly quantitative focus on teaching students to calculate, yet, they would also qualitatively focus on helping students know what and why to calculate (i.e., the relationship between what is reality and what is the desired future). Just as the 1996 OEIS model assumed a business core, the newly designed model continues to embrace business acumen as an essential to every OEIS graduate.

At the center of this business core is a circle surrounding the word, "Leaders." This geometric shape represents the end goal—a holistic, comprehensive international business and technological skill set. Just as in the game of chess where one must be able to see several moves ahead in order to plan winning strategies, future IT leaders must have the ability to not only understand current issues, but must also see the changes lurking around the next corner. Tapscott and Caston (1993) suggested that a paradigm shift in leadership skills is needed because a "fundamental change is taking place in the nature and application of technology in business" (p. xi). As set forth in the MTC Model, this new style of leadership is firmly rooted in an environment where qualitative and quantitative research skills, soft and hard skills, and creative and critical thinking is a part of students' daily learning experiences and where students have been provided with solid business knowledge. In this model, the triad of management, technology, and communication disciplines is the source of a majority of this knowledge with acknowledgment that other cultural and academic sources may also be present. The MTC Model can help to create IT leaders who are not only tech savvy but also more conceptually minded and who will be "responsible for building organizations where people continually expand their capacities to understand complexity, clarify vision, and improve shared mental models" (Senge, 1990, p. 340).

Integration of MTC into a Systematic Curriculum

No functional area of a business or organization operates in a vacuum but, rather, works as a subsystem within the larger system. Ackoff and Emery (1972), Deming (1994), Goldratt and Cox (1992), and Senge, et al. (1999) call for organizations to move to a systemic, rather than functional, management philosophy. Education, serving the world of work, is well advised to provide this integrated approach. Yet, curriculum design in higher education has traditionally taken a piecemeal approach. Therefore, the question becomes "how do OEIS course designers, educators, and administrators move to a more integrated approach that pulls from disparate (transfers, changes of major from liberal arts and sciences, etc.) independent coursework?"

In the MTC model, the curriculum is broken into integral parts (i.e., a course in a programming language) to allow individuals to become familiar with smaller scope tasks and later complemented with a capstone course. In addition, qualitative study, with case studies and collaborative, experiential learning as cornerstone methodologies, provides a method that integrates approaches to theoretical and applied concepts, uniting the three main components of the MTC model—management, technology, and communication. As the hardware and software of the future evolve, curriculum change, built on a solid foundation of existing technologies, provides users with new abilities. Students' preparation for

understanding and using these new tools depends on the inclusiveness of their OEIS program of study.

Critical questions that OEIS educators need to ask include: Who are we serving? What tools have a future? When do we teach what? What does the future hold? How do OEIS students migrate from the "button savvy" and technical facts to a more conceptual level of thinking in the field? In order to answer the last question, lifelong learning becomes the focus of formal educational institutions. Encouraging this quest for knowledge and creativity is the most rewarding aspect of teaching, yet one of the hardest to achieve.

As OEIS educators implement and design their curricula, it is imperative to remember flexible forms of education, emerging and improved opportunities for learning through the Internet, and the different learning styles required for digital learners. Quality OEIS programs should not promote rote learning but encourage exploration and problem solving, as well as provide venues for students to become active, reflective, and self-directed learners (Mitchell & Hope, 2002). As educators implement the 2004 model, it is important to provide a means for students to achieve academic, professional and personal outcomes by integrating classroom theory with experiential learning arrangements (just as any health care specialty or teacher education program does with clinical practices). The deliverables are invaluable in that OEIS students will clarify career goals, understand workplace culture, and, most of all, gain workplace competencies. Lastly, OEIS academicians benefit, too, from professional networking, determining strengths and weaknesses, and gaining insight into areas of program assessment.

Macro Level Implementation of the MTC Model

If the core of a business is its primary operation (doing or making the product or service the company provides to its customers/clients), then IT—just as accounting, finance, human resources are—is a service or enabling function. The OEIS curriculum contains a structured and well-rounded core of business components combined with technology topics that improve the ability of the student to service, even anticipate, the technology needs of end users. Technical skills learning, including language, telecommunications, and networking, provides the skeleton on which hangs the flesh developed using case studies, internships, and other means of studying and interacting with real organizations.

As the complexity and speed of technological activity continues to increase, the IT function even more rapidly facilitates and coordinates transactions and communications while automating additional tasks across the organization. With increasing globalization of technology services, i.e., remote server maintenance from India, China, and Russia, development of leading edge processes, combinations of activities that are difficult to duplicate or those that can be protected as intellectual property will provide competitive advantages to organizations and the individuals needed to run and maintain these processes. The curriculum, therefore, needs to be structured, yet highly flexible. Success in the broad-based application of technology must be accompanied by education and training of end users, not just technical personnel.

Changes partially created by improvements in technology—the proverbial Catch 22—have to be offset by an ability to continuously improve and need to be accompanied by strong knowledge of current business practices. In other words, IT students must know how to manage: to collect and convey information, to make decisions, and to promote interpersonal unity (OSRA, 2004). Since all of these jobs happen through communication, an IT curriculum needs to provide students with practice of business communication skills within a technological framework utilizing management training. IT students need exposure to courses such as a business and technical presentations class in which they use technological tools to design communication applications that illustrate and support a wide range of management issues. Topics covered could include ethics and decision-making, managing conflict in risk and crisis

situations, and design issues for communicating well in intercultural and international contexts, especially given the global reach of the Internet.

Moreover, the required capstone case course in the OEIS Model provides a perfect venue for placing considerable emphasis on the synthesis and evaluation of organizational and technology concepts from the managerial perspective. The case approach methodology is renowned for enhancing students' problem-solving skills, their abilities to conceptualize systems design, role-playing the implementation of practical IT solutions, and communicating ideas clearly to peers and superiors. Herein, the students realize that OEIS is an eclectic and demanding compilation of knowledge from a variety of fields including leadership, psychology, sociology, management, computer science, telecommunications, and information technology (Wohl & Hunt, 1991). Given that there is often no single right answer, this approach also gives the student the opportunity to think critically and thoroughly about a situation or process that requires a pragmatic workable solution.

Just as in earlier versions of OSRA's Model Curriculum (1986, 1996), the 2004 model is designed as a framework to use in tailoring a curriculum that prepares students with the essential skills for assessing, implementing, and evaluating information technologies to meet changing workplace requirements in a knowledge-based economy. As noted by the 1996 curriculum chair, OSRA has put curriculum development at the forefront of its professional contributions to the field (O'Connor, 1996). The new model displays a joint effort between academia and IT professionals as curriculum designers strive for continuous improvement in organizational and end-user information systems.

Conclusion

Developing the design and focus of undergraduate curricula is always an evolutionary process. "This is especially the case in the field of end-user information systems, which has undergone tremendous change due to the exponential development of technology and the constant shifting of workplace requirements" (Hunt, 2004, p. iii). The MTC Model for Training Knowledge Workers in a Digital Economy has three interdisciplinary portals for engagement: Management, Technology, and Communication.

The model is only a baseline, rather than a model that addresses every potential situation. The major objective of this model is to aid academicians in becoming aware of ways to better prepare OEIS students for participation in a digital, knowledge-based economy of unbridled change. The literature supporting this model, as well as the 2004 OEIS Model Curriculum, provides educators with resources and a blueprint for design and implementation of curricula that will better prepare graduates for the digital economy.

In summary, the OEIS educator's credibility in the private sector is not only determined by, but also solidified by, the caliber of student that employers recruit and hire in your service region. Subsequently, in design and implementation of OEIS programs, search for OEIS universities and colleges that have developed successful programs in this specialty area of information systems. Secondly, establish an advisory board of knowledgeable IT practitioners and alumni who can assist you in reviewing current technological trends, as well as program assessment. Lastly, become actively involved and network with professional organizations (both academic and industry related) and associated memberships who will assist you in preparing knowledge workers for the first decade of the 21st century. Bon voyage on your OEIS curriculum journey!

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