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## Using Multimedia Instructional Materials in MIS Classrooms: A Tutorial

Randy V. Bradley  
*University of Tennessee*

Victor W. A. Mbarika  
*Southern University, victor@mbarika.com*

Chetan S. Sankar  
*Auburn University, sankar@business.auburn.edu*

P.K. Raju  
*Auburn University, pkraju@eng.auburn.edu*

Bangaly Kaba  
*Southern University and A&M College*

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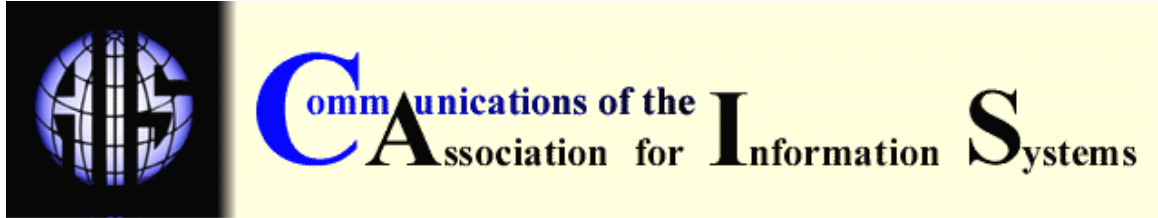
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## USING MULTIMEDIA INSTRUCTIONAL MATERIALS IN MIS CLASSROOMS: A TUTORIAL

Randy V. Bradley  
The University of Tennessee  
Knoxville, TN  
[rbradley@utk.edu](mailto:rbradley@utk.edu)

Victor W. A. Mbarika  
Southern University and A&M College  
Baton Rouge, LA 70813

Chetan S. Sankar  
P. K. Raju  
Auburn University  
Auburn, AL 36849

Bangaly Kaba  
Southern University and A&M College  
Baton Rouge, LA 70813

### ABSTRACT

Instructors typically communicate technical concepts to information systems (IS) students via lectures and textbooks. In some cases, instructors supplement this traditional approach with written case studies and projects. In this tutorial, we present a non-traditional approach that could be used to communicate technical, as well as non-technical, concepts to IS students – use of multimedia instructional materials. This article also provides practical advice on how to adapt and implement pedagogy that includes multimedia instructional materials in MIS classrooms. The instructional materials include multimedia case studies that communicate concepts such as choosing appropriate operating systems for specific purposes; understanding Internet and satellite technologies; and decision support and expert systems used to solve real-world problems. The purpose of this article is to present a step-by-step tutorial on using multimedia instructional materials in a typical IS class.

**KEYWORDS:** multimedia, instructional materials, case study approach, tutorial

### I. INTRODUCTION

Researchers and major computing associations such as the Association of Information Systems (AIS) and the Association of Computing Machinery (ACM) have invested much effort during the last two decades to shape information systems (IS) curriculums. The intent of these organizations is to help structure IS curriculums that address recent developments and rapid changes in the IS industry [Gorgone et al. 2000; Nunamaker et al. 1982] and that provide learning experiences that are more conducive to students born during, and native to, the digital era. Another objective of

these organizations is to help overcome the skill shortages that exist in the IS field, a trend that is expected to continue in the years ahead [Gorgone et al. 2000]. While many students are enrolled in IS programs around the world (despite the recent drop in IS enrollments), students do not seem to gain the kind of knowledge and technical expertise they will need to overcome real-world challenges in the business world. Therefore, there is a need to prepare IS students for real-world challenges by developing their technical knowledge and decision-making skills.

The purpose of this article is twofold. One purpose is to help IS researchers and educators evaluate the potential of multimedia instructional materials, such as those developed by the Laboratory for Innovative Technology and Engineering Education (LITEE), as a pedagogy that assists instructors in conveying information technology (IT) concepts to students. LITEE is an NSF-sponsored project conducted at Auburn University that creates award-winning multimedia instructional materials. Their instructional materials have been shown to help facilitate the improvement of students' higher-order cognitive skills and to help convey technical concepts to students in technical and non-technical fields [Bradley et al. 2007; Mbarika et al. 2003]. The multimedia instructional materials developed by the LITEE team cover concepts ranging from IT strategic management and decision support to financial management of IT investments. More information about multimedia instructional materials developed by LITEE and strategies for creating and implementing multimedia instructional materials is provided in Section V.

Another purpose of this article is to present a tutorial on how to use multimedia instructional materials in a typical IS introductory class. In addition, we outline the most critical issues that instructors and administrators should consider before using multimedia instructional materials developed by LITEE or similar organizations. This article should be especially useful and appealing to instructors and administrators who desire to use multimedia instructional materials in IS undergraduate classrooms to foster a collaborative and dynamic learning environment.

The tutorial is organized into 10 sections. Following this introduction, section 2 defines multimedia. Section 3 defines higher-order cognitive skills; section 4 discusses the need for students to develop higher-order cognitive skills. Section 5 discusses the benefits and limitations of using multimedia instructional materials in IS classes. Section 6 discusses strategies for developing and selecting appropriate multimedia instructional materials for use in IS classes. Section 7 offers practical guidance for people who are considering using multimedia instructional materials in IS classrooms, and section 8 includes suggestions on how to evaluate students' progress in the use of multimedia instructional materials. Finally, section 9 contains conclusions, and section 10 contains acknowledgements.

## II. DEFINING MULTIMEDIA

Many different definitions of multimedia exist; in this paper, we are using a definition provided by Gaytan and Slate [2002/2003]. Gaytan and Slate [2002/2003] suggest that the term *multimedia* generally refers to the combination of several media of communication such as text, graphics, video, animation, music, and sound effects. When used in conjunction with computer technology, multimedia has been referred to as interactive media [Fetterman 1997; Gaytan and Slate 2002/2003]. Gaytan and Slate [2002/2003] cite four components essential to multimedia. The components include (1) a computer that coordinates sound, video, and interactivity; (2) hyperlinks that connect the information; (3) navigational tools that browse the Web site or Web page containing the connected information; and (4) methods to gather, process, and communicate information and ideas. Furthermore, they suggest that multimedia does not exist if one of these four components is missing, and depending on which component is missing, the product might be referred to by a different name. For example, the product might be referred to as (a) mixed media if the component that provides interactivity is missing; (b) a bookshelf if it lacks links to connect the information; (c) a movie if it lacks navigational tools that allow the user to choose his or her course of action; and (d) television if it does not provide users the opportunity to create and contribute their own ideas [Gaytan and Slate 2002/2003]. Thus, multimedia is defined as "the use

of a computer to present and combine text, graphics, audio, and video with links and tools that allows the user to navigate, interact, create, and communicate" [Gaytan and Slate 2002/2003].

### III. DEFINING HIGHER-ORDER COGNITIVE SKILLS

Higher-order cognitive skills consist of purposeful, outcome-directed thinking based on a body of scientific knowledge derived from research. The demonstration of higher-order cognitive skills is broader than merely seeking a single solution to a problem. It involves identifying options or alternatives and then selecting one that is best for meeting the desired outcome. In other words, the outcome directs and gives meaning to the task. Higher-order cognitive skills also denote that an individual has acquired an adequate portfolio of skills to make a decision within a specified period. Higher-order cognitive skills, therefore, suggest an ability to identify, integrate, evaluate, and interrelate concepts, and hence make the appropriate decision(s) in a given problem-solving situation [Hingorani and Sankar 1998; Mbarika et al. 2003]. Most individuals are capable of higher-order thinking, although it is a long-term development process that must be nurtured and reinforced.

### IV. THE NEED TO IMPROVE STUDENTS' DECISION-MAKING AND HIGHER-ORDER COGNITIVE SKILLS

Instructors place great emphasis on preparing students to graduate with good decision-making and higher-order cognitive skills. One of the many reasons or needs for improving students' decision-making and higher-order cognitive skills is to enhance students' performance in real-world work environments. The need for qualified managers with solid technical skills is well documented in job postings and academic literature [Lim and Benbasat 2000]. The technical skills needed usually include a good understanding of technical issues related to a given line of business. Communicating highly technical issues to non-technical managers in a way they can comprehend continues to be an issue of concern in both academia and industry [Lim and Benbasat 2000]. It is critical to prepare students to be successful as they enter the workforce by providing them with an education that develops and improves higher-order cognitive skills such as reasoning, identifying problems, specifying criteria, integrating, interrelating, and problem solving [Bradley et al. 2007; Guzdial and Soloway 2002; King 2000].

Although instructors must prepare students for the workforce, they are finding it a challenge to tailor the educational process to facilitate the development and improvement of students' decision-making and higher-order cognitive skills. Because student learning is the primary purpose of teaching [Larkin-Hein and Zollman 2000], it is worth investigating a pedagogy that is believed to help improve student learning. One pedagogy that has been identified as helping instructors communicate difficult, technical concepts, in both the field of IT and engineering, is multimedia instructional materials, specifically multimedia case studies [Bradley et al. 2007; Mbarika 1999; Mbarika et al. 2003; Mbarika et al. 2001; Raju and Sankar 1999]. We will use the terms *multimedia case study* and *multimedia instructional material* interchangeably throughout this article.

### V. BENEFITS AND LIMITATIONS OF USING MULTIMEDIA INSTRUCTIONAL MATERIALS IN IS COURSES

Nielsen [1995] reports that multimedia systems enable non-linear access to vast amounts of information. Other researchers show that with multimedia, users can explore information in-depth and on-demand and can interact with instructional materials in a self-paced mode [Barrett 1988; Collier 1987]. Others state that multimedia is attention-capturing or engaging to use and represents a natural form of representation with respect to the workings of the human mind [Delany and Gilbert 1991; Jonassen 1989]. Oliver and Omari's [1999] study suggested that while print (paper-based) instructional materials provided a sound means to guide and direct students' use of World Wide Web (WWW) learning materials, the actual WWW materials were more suited

to supporting interactive learning activities than to conveying content and information. Conversely, multimedia instructional materials, such as those developed by LITEE, are aimed at both improving what students learn and the way students learn [Sankar and Raju 2002]. Thus, incorporating multimedia instructional materials into higher education could improve the quality of learning for students [Alexander 2001; Bradley et al. 2007].

### **BENEFITS OF MULTIMEDIA INSTRUCTION**

Several articles have evaluated the use of multimedia instructional materials in IS undergraduate classrooms and found the students' responses to be favorable [Bradley et al. 2007; Mbarika et al. 2003; Sankar and Raju 2002]. In using multimedia instructional materials in undergraduate IS classes, and in analyzing e-journals and students' comments, we have identified the following advantages and strengths (see Figure 1 in Appendix II):

- Brings theory and practice together in classrooms
- Develops higher-order cognitive skills in students
- **Provides an informative and fun learning experience\***
- Encourages active teamwork among students
- Helps students develop personal attributes and traits
- **Brings excitement of real-world problems into classrooms\***
- Offers insight into emerging technologies and concepts
- **Makes vast amounts of information easily accessible, which enhances opportunities for analysis\***

### **LIMITATIONS OF MULTIMEDIA INSTRUCTION**

Although this method of instruction has many advantages, it is not without its share of limitations or challenges. In using multimedia instructional materials in a number of courses, we identified the following as some of the limitations:

- Requires a heavy investment of energy and planning from the instructor
- Requires regular updating because information may be out of date due to the lengthy production cycle for multimedia instructional materials
- Includes the challenge of measuring actual learning. However, we have noticed increased attention and interest in the instructional materials from students. Students have also reported improvement in their learning and skill development.

An approach that we have taken to measure actual learning is to give knowledge assessments of course content in the form of pre- and post-tests. These assessments have helped us establish a connection between what students perceive they have learned and what they actually learned. The knowledge assessments should be structured so they accurately gauge students' knowledge of the concepts that are conveyed through the case studies, whether directly or indirectly. Failure

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\*Note: These items provide a distinct advantage for multimedia cases because these are advantages that the traditional case study method cannot provide. Students use a variety of technologies to explore the cases. Students have access to real-world professionals, via video clips, adding to the authenticity of the experience. Students' analyses are not limited by page count. Rather, they must choose from a larger information pool in deciding what is critical to decision-making.

to assess knowledge gained accurately could invalidate claims about the significance of the multimedia case studies in improving students' learning. Because it is sometimes difficult to know whether the lectures or the case study materials contributed to the improvement in learning, we suggest avoiding lecturing on concepts that appear on the knowledge assessments to gauge learning more accurately. We also recommend guarding against having the same questions appear on multiple knowledge assessments. Therefore, the knowledge assessments should be specific to each case study. We typically go through several iterations of developing and refining our knowledge assessments.

Because of the many advantages and because of the steps that can be taken to address what we consider the most serious limitation/challenge of multimedia instruction, it appears that the benefits of using multimedia instructional materials greatly outweigh the limitations and challenges. Furthermore, multimedia case studies engage students on a different level than traditional case studies, and with students who are increasingly from the world of YouTube and Google, multimedia case studies cater to their interests, give them much more to consider, and better depict what they will face in industry.

## **VI. STRATEGIES FOR DEVELOPING AND SELECTING MULTIMEDIA INSTRUCTIONAL MATERIALS**

Our experience in developing case studies suggests that multimedia case studies are meaningful if they relate to a problem that actually happened in industry. In support of our belief, Chen [2000] states that using realistic business data facilitates students' problem-solving and decision-making skills and better prepares students for what they will face once they enter industry. Therefore, we recommend that the development of multimedia instructional materials be done in partnership with industry. We also suggest that technical case studies be peer reviewed and tested in classrooms before they become part of the IS curricula. For example, LITEE has developed several multimedia case studies that are appropriate for use in IS classrooms; each case was subjected to rigorous review by industry experts, faculty, and undergraduate and graduate students before the multimedia instructional materials were disseminated nationally.

The LITEE team consists of faculty and students from the Colleges of Engineering and Business at Auburn University (<http://www.auburn.edu/research/litee>). The team works with industry partners to identify suitable engineering or IT problems and bring them alive in the classroom by creating a multimedia case study. The multimedia case study is then tested for pedagogy and content by faculty and students at various institutions. Figure 1 depicts the methodology used by LITEE to develop multimedia case studies. To date, a series of multimedia case studies have been developed by the LITEE team and are available at [http://www.lulu.com/litee\\_cases](http://www.lulu.com/litee_cases). Table 1 summarizes ten multimedia case studies that have been developed by LITEE.

The case method of teaching, regardless of the medium of delivery, requires a heavy investment of both energy and planning on the instructor's part. The case method also requires serious commitment from the student so the instructor should notify students of the rigors of such an approach. The instructor should also inform the students of the primary tools of instruction that he or she intends to use in the course, especially if the plan is to use multimedia case studies. We suggest using multimedia case studies, such as those developed by LITEE, to supplement the theories and concepts covered in textbooks. Although multimedia case studies developed by other agencies may suffice, multimedia case studies developed by LITEE have been shown to improve the quality of student learning in the areas of IT, engineering, accounting, finance, and management. Regardless of the agency that develops the multimedia cases studies, it is important to choose multimedia case studies that match the topic areas of the IS class.

Table 1. Summary of LITEE Multimedia Case Studies

[Available from www.lulu.com/litee\\_cases](http://www.lulu.com/litee_cases)

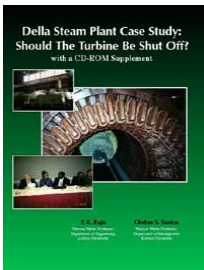
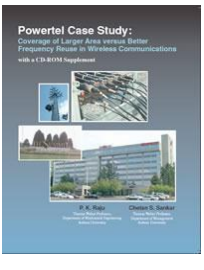
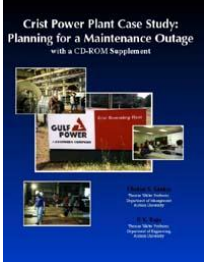
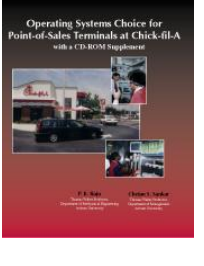
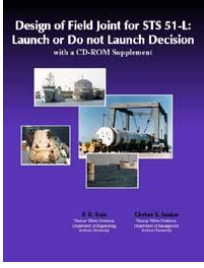
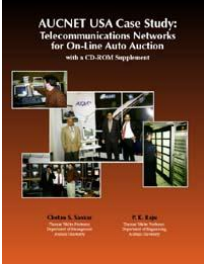

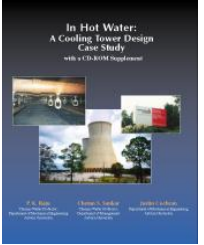
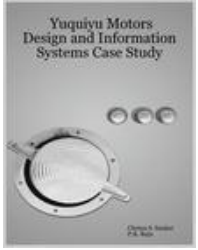
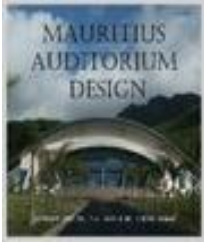
<p><b><u>Case study name: Della Steam Plant</u></b></p> <p><b>Company:</b> Alabama Power Company</p> <p><b>Problem studied:</b> A turbine generator unit produced such high levels of noise and vibration that the building had to be evacuated. A video demonstrates 17 mils of vibration on a 10-pound rotor kit, thereby providing a means for students to visualize the vibration of 120,000-pound turbines. Two of the engineers in the plant make conflicting recommendations to the manager. The manager has to decide what to do next.</p>		<p><b><u>Case study name: Powertel Wireless Cell Tower</u></b></p> <p><b>Company:</b> T-Mobile</p> <p><b>Problem studied:</b> Details the overload and lost calls on a busy intersection in Birmingham, AL, suffered when marketing announced a new rate plan without consulting the engineering division. It shows the importance of design and location of cell towers in providing quality service to customers.</p>	
<p><b><u>Case study name: Crist Power Plant</u></b></p> <p><b>Company:</b> Gulf Power Company</p> <p><b>Problem studied:</b> Involves a choice between repair and replacement options for a turbine generator. The cost options vary between \$1 and \$3 million, and the students use a decision support system to defend their decisions. They are able to play “what if” analysis using this tool.</p>		<p><b><u>Case study name: Chick-fil-A</u></b></p> <p><b>Company:</b> Chick-fil-A</p> <p><b>Problem studied:</b> Details the business impact of the choice of an operating system used to run the point-of-sale terminals in Chick-fil-A stores. Students must choose between Windows CE, Windows NT, or another operating system such as Linux, and determine the implications of this choice for the company.</p>	
<p><b><u>Case study name: Solid Rocket Booster (SRB)</u></b></p> <p><b>Company:</b> NASA</p> <p><b>Problem studied:</b> Involves the design of the field joint of the Solid Rocket Booster used in the Space Shuttle Challenger. The multimedia CD-ROM traces the design and implementation of the field joint from 1972 to 1986. It shows that the design chosen during the 1980s was found to be catastrophically inadequate in 1986, necessitating a major redesign effort.</p>		<p><b><u>Case study name: AUCNET USA Satellite Auction System</u></b></p> <p><b>Company:</b> AUCNET USA</p> <p><b>Problem studied:</b> Involves e-commerce and concerns a Japanese-owned company that started operations in the U.S. selling cars via a satellite-based online auction process. It was losing customers and had to make a choice between competing technologies to avoid bankruptcy.</p>	

Table 1. Summary of LITEE Multimedia Case Studies

[Available from www.lulu.com/litee\\_cases](http://www.lulu.com/litee_cases)

<p><b>Case study name:</b> <i>Lorn Textiles</i>  <b>Company:</b> Lorn Textiles  <b>Problem studied:</b> Shows the importance of safety and serviceability considerations in the design of a lap-winder machine used in textile mills. It describes a worker in a textile mill who lost three fingers while performing maintenance on this machine. The case study discusses the legal issues related to the problem and highlights how engineers, acting as expert witnesses, may have to explain difficult technical concepts to a jury comprised of ordinary citizens.</p>		<p><b>Case study name:</b> <i>In Hot Water</i>  <b>Company:</b> Southern Nuclear  <b>Problem Studied:</b> Investigates the design of the cooling towers at a nuclear power plant and how the placement of a \$2 nozzle can have a \$2 million impact on the profits of a power plant.</p>	
<p><b>Case study name:</b> <i>Yuquiyu Motors</i>  <b>Company:</b> Engine Manufacturer  <b>Problem studied:</b> Discusses the Y11 engine, a 13-horsepower cool-bore (aluminum) engine planned for release in 1998. This engine failed its emission tests and launch was delayed until 2001. Data confirmed that there were problems with an improper amount of oil consumption and exhaust release. It highlights the lack of integration between engineering information systems, and enterprise information systems and how the lack of systems integration affects engineering design.</p>		<p><b>Case study name:</b> <i>Mauritius Auditorium Design</i>  <b>Company:</b> Larsen &amp; Toubro  <b>Problem studied:</b> Discusses the creation of a polyvalent hall for a U.N. meeting in India. When preparing for another event, a problem with the acoustics within the hall was discovered. The case study highlights issues related to reverberation and provides opportunities for students to determine what actions the company should take to solve the problem both technically and ethically.</p>	



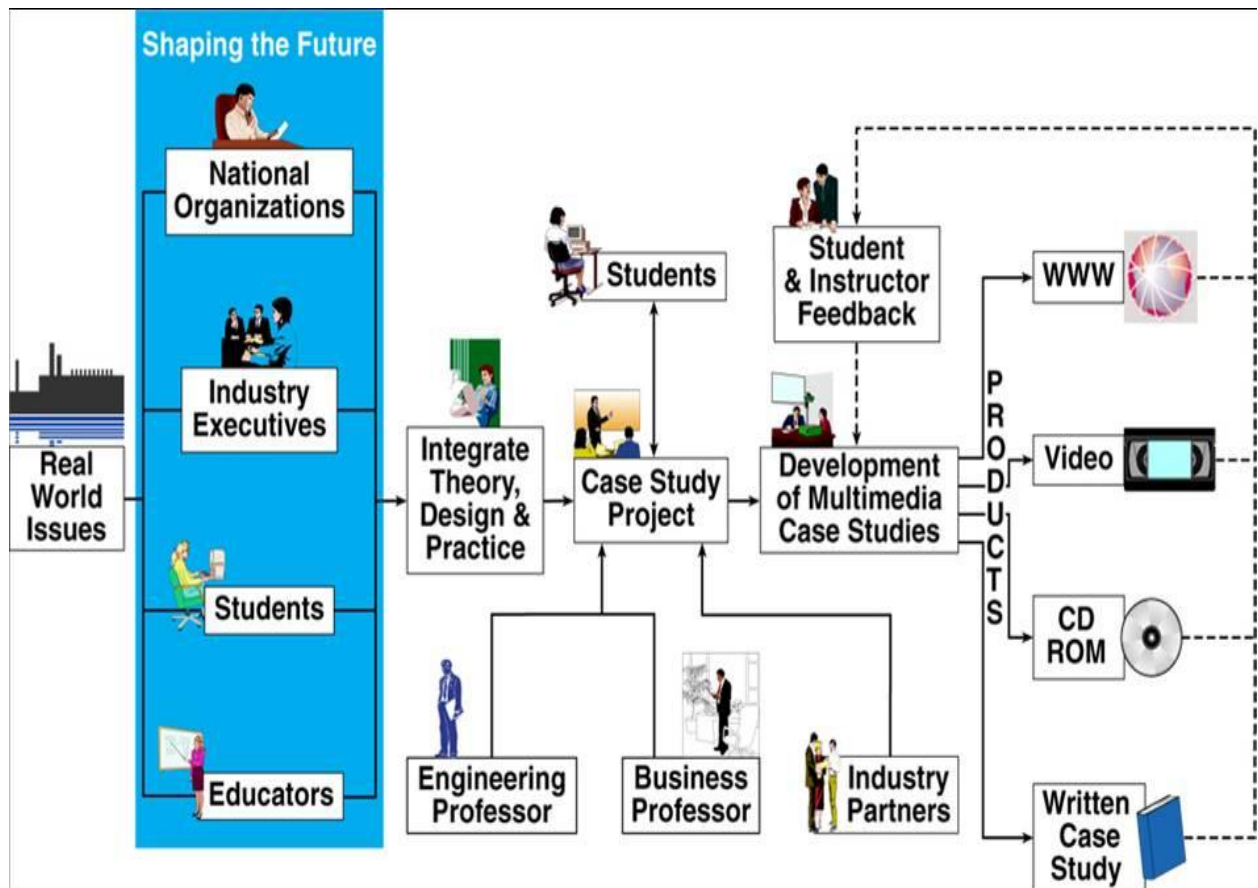


Figure 1. Methodology Used to Develop Multimedia Case Studies

If using the multimedia case study method for the first time, we recommend two primary tools – a conventional textbook and a single multimedia case study. Those who are more experienced with this method of instruction may elect to bypass the traditional textbook and use a custom text consisting of several multimedia case studies. Because most of our experience is with multimedia case studies developed by LITEE, this tutorial is written from that perspective. This tutorial does not preclude instructors from using multimedia case studies developed by other agencies; however, instructors should be aware that our instructions may require slight modification to accommodate multimedia case studies developed by others.

### SELECTING A MULTIMEDIA CASE STUDY

When selecting a multimedia case study, instructors should consider several things. One is the way he or she plans to use the case study. Will the instructor use it to supplement other course materials or will the case study serve as the overarching method for disseminating course content? A second consideration is the type and level of the course in which the instructor plans to use multimedia case studies. Assuming the multimedia instructional materials are implemented in an introductory IS course, we recommend the use of a traditional textbook that covers basic introductory concepts in IS and a multimedia case study that touches on several of the areas covered in the course.

The third consideration relates to the desired depth of coverage and the learning objectives of the course. This concern relates to evaluating the type of competency materials included with the

multimedia case study. By this, we mean that instructors should determine beforehand the depth of understanding and level of mastery that he or she wants students to attain. Depending on the type of course and the course objectives, the instructor may elect not to have students purchase a textbook. We have taken this approach in a variety of courses at various levels and at various universities. For instance, we have taken this approach in a graduate course titled Strategic Management of IT at a small, non-traditional university and in an undergraduate course titled Introduction to MIS at a large, traditional university. In both cases, the depth and breadth of the competency materials and the course objectives played a major role when selecting the multimedia instructional materials.

### **THE STRUCTURE OF MULTIMEDIA CASE STUDIES**

Multimedia case studies are typically produced on CDs so students can use them individually or in teams. Projects that use podcasts and streaming video and audio via the Internet to deliver the content on demand are also underway. Because such projects are still in their infancy, we will focus on the CD-based method. The CD makes it possible for students to see the case study problem and, in some cases, hear it spoken by those who must make the decision in the real world (i.e., actual employees of the company experiencing the problem). The CD also includes video footage of company employees, typically managers, who explain the issues and assign tasks to the students. The visual presentation includes factual and live aspects of the case, such as the problem under investigation, potential alternative solutions to the problems as identified by the company, and a request for the students to provide a viable solution. The CD contains high-quality photos, animations, and videos that provide depth of coverage on concepts relevant to the problem. Thus, the multimedia format provides an interactive experience for the students. In addition, the multimedia presentation of the case study provides links to internal and external sources that provide more information about related concepts and topics. Although the CD is packaged with the print version of the case study, it also contains the entire text of the case study in HTML format. This affords students the flexibility of deciding how they want to read the case study. Furthermore, LITEE now offers the purchase and download of multimedia case studies via the Internet at [http://www.lulu.com/litee\\_cases](http://www.lulu.com/litee_cases).

The multimedia instructional package also includes a comprehensive instructor's manual in a CD format. This manual includes solutions adapted from the real-world situations, live video footages (some of which are not included on the student version of the CD), animations, teaching suggestions, PowerPoint presentations, and sample exam questions with answers. Depending on the case study, both the student version and instructor's manual include several innovative features, such as audio clips, video clips, and decision support software. The next section describes one of the many multimedia case studies used in typical IS courses.

### **THE AUCNET USA MULTIMEDIA CASE STUDY**

AUCNET USA sold used cars to dealers throughout the United States using a real-time online satellite system. Its main competitors were national auto auction houses and independent auctions. AUCNET's proprietary technology allowed it to provide its customers services comparable to those offered by traditional auto auction houses but with greater convenience. Customers previewed cars and bid on cars from their own dealerships instead of traveling to auction sites. The sellers benefited because they did not need to transport their vehicles to an auction site. The online auction also offered more choice to the dealers because they could view autos offered for sale throughout the country or in a particular region. The vehicle inspection process (Figure 2) was at the heart of AUCNET USA.



Figure 2. The Vehicle Inspection Process at AUCNET USA.

AUCNET USA was very methodical about its inspection process. It preferred to hire individuals who had at least 10 years of automotive repair and maintenance experience. They were then trained for six weeks on the inspection process. For each scheduled auction, the inspectors were dispatched to dealerships, marshaling areas, and rental lots to evaluate and inspect the vehicles thoroughly.

On sale day, both buyers and sellers attended an AUCNET Satellite Auto Auction from their dealerships and bid in real-time on selected vehicles based on instructions provided to them. An auctioneer sitting in a booth in Atlanta announced the bids for each car. At their dealerships, the dealers bid on the cars by pushing the top button on a bid stick (Figure 3). Once the floor price (price set by seller) was reached, the SELL sign appeared on all screens and the vehicle was sold to the highest bidder. Anytime during the bidding process, a seller could lower his or her floor price and sell the vehicle by pressing the confirmation button on the bid stick. Once the sale was confirmed, the buyer had to press the confirmation button on the bid stick to lock in the price and close the sale of that vehicle. The name of the buyer's dealership and location appeared on all screens. The vehicle was considered a "no sale," if a two-minute time limit expired before the floor price was reached. The auctioneer was able to extend more time if needed.

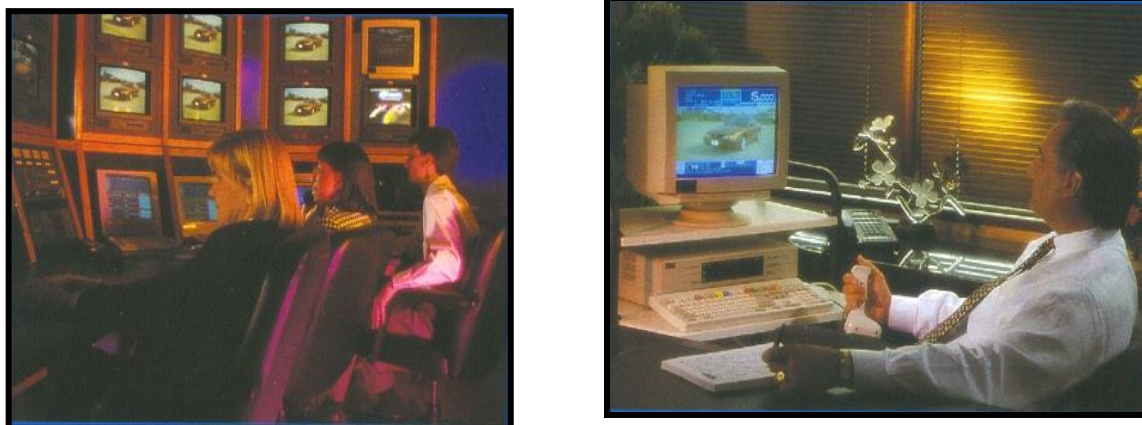


Figure 3. AUCNET Network Control Center (left) Monitoring Dealers Bidding (right)

Their network was based on terrestrial facilities when the company started operations in Japan in 1985. Later, the Japanese network was upgraded to an analog satellite system. The success of the operations in Japan led to the creation of a subsidiary in the U.S. The upgraded network was

based on digital satellite technology. Dealers were provided a proprietary computer system mounted on a cart so that they could easily move it around their offices. The system enabled dealers to participate in online auctions and bid for used cars. Mr. Oana, the CEO of AUCNET USA, wanted the company to maintain its competitive advantages and expand into new markets. He requested that an IT evolution plan be created so that AUCNET could be a technology leader.

**VII. STRATEGIES FOR USING MULTIMEDIA INSTRUCTIONAL MATERIALS IN IS CLASSES**

**STRATEGIES FOR IMPLEMENTING MULTIMEDIA CASE STUDIES**

Using multimedia case studies in a classroom requires the work of multiple groups of people, especially the instructor and students. In light of the various approaches that instructors could take to secure students' participation, we recommend a commitment session. The commitment session should take place during the course introduction (usually the first day of class), even if the instructor's plan is to use the multimedia case studies later in the term. During the commitment session, the instructor secures students' participation by having them sign a "commitment agreement" simultaneously with him or her, in an attempt to emphasize the seriousness of the commitment. The commitment agreement should stress the rigor of the course, the instructor's expectations of the students, and the students' expectations of the instructor.

Table 2. Sample Lesson Plans

5-Week Plan	1-Week Plan	1-Day Plan
Week 1: Knowledge Assessment Teaming Exercises Case Introduction	Day 1: Knowledge Assessment Case Introduction Team/Case Assignment	Session 1: Knowledge Assessment Case Introduction Team/Case Assignment
Week 2: Team/Case Assignment Team Case Discussions E-journal	E-journal	E-journal
Week 3: Team Case Discussions	Day 2: Case Presentations	Session 2: Case Presentations
Week 4: Case Presentations	Knowledge Assessment Case Feedback E-journal	Knowledge Assessment Case Feedback E-journal
Week 5: Case Presentation Knowledge Assessment Case Feedback E-journal		

The strategies we provide following, though not meant to be exhaustive, are techniques that, in our experience, have proven to be effective in IS courses at both the undergraduate and graduate

level. The time span for a typical multimedia case study ranges from one day to five weeks on average, depending on how the instructor decides to run the class. We prefer the five-week model because it allows the students enough time to analyze the problem outlined in the case study, and it is short enough so that students do not feel that too much time has been allocated for the analysis. In Table 2, we provide sample lesson plans, which instructors may adopt as is or modify as needed, for using multimedia case studies. It is important to note that the lesson plans themselves do not depend on the method/medium of delivery of the case study (i.e., multimedia format or traditional format). The difference between the two approaches, relative to the lesson plan, lies in the way students interact with the case study and how the instructor facilitates the team case discussions. However, we do highlight some areas that might differ between the multimedia case study approach and the traditional case study approach (see Table 3).

Table 3. Comparison of Methods

<b>LITEE Multimedia Case Study Model</b>	<b>Conventional Case Study Model</b>
A single case developed for undergraduate business and engineering students as well graduate students from both areas	Primarily developed for undergraduate and graduate business students
Students are not expected to have any industry experience or understanding of the supporting areas/concepts.	Students are expected to have good industry experience and understanding of supporting areas/concepts.
Emphasis on providing an understanding of business and engineering topics and how they integrate in the real-world	Emphasis typically on business, IS, and operations strategies
All case studies are supplemented with competency materials.	Typically no competency materials for case studies are provided.
Multimedia aspect depicts operations in the industry and provides an interactive experience for students.	Very few have multimedia capabilities and those that have them typically provide limited interaction through a "talking head"
Case studies are designed for various learning styles; the media contains the case study in multimedia and print form.	Case studies primarily designed for traditional learning styles
Case studies and competency materials are comprehensive and elaborate (typically 75 pages).	Case studies are succinct (typically 15-20 pages).
Case studies include several additional exercises aimed at developing students' teaming skills.	Case studies typically lack additional exercises aimed at developing students' teaming skills.
Case studies contain materials that teach students about the scientific approach to decision-making.	Case studies appear to assume that students are familiar with the scientific approach to decision-making; the cases typically lack materials that discuss the process.
Case studies include extensive information surrounding the problem, including company documents in some cases, requiring students to synthesize vast amounts of information and determine what information is pertinent.	Case studies typically only contain pertinent information and are neatly presented, not allowing students the opportunity to chart their own course for making a decision.

In the subsequent sections, we discuss the elements of the five-week plan. We take this approach because all of the elements included in the five-week plan are also included in the shorter lesson plans, in an abbreviated form. Therefore, it is more valuable to discuss the elements of the lesson plans rather than the lesson plans themselves. Unless otherwise stated, we discuss all elements from the perspective of the five-week plan.

## **CASE INTRODUCTION**

Week 1 is one of the most hectic weeks of the class sessions in the five-week model. This is mainly due to the preparation required for the first session, in addition to the fact that week 1 sets the stage for the upcoming weeks. The five-week model does not allow for many mistakes because any event or activity that fails to take place during the first week could negatively influence students' perceptions of the multimedia case study experience. This is especially true if students, or even the instructor, are using multimedia case studies for the first time.

Before conducting the class session in which the instructor plans to introduce the case study, he or she should become familiar with the layout of the case study as presented on the CD and in the corresponding competency materials. Although students do not need to review all of the competency materials before the case study introduction, some material is vital in helping students understand the problems they will need to solve. The instructor should identify the appropriate competency material and assign it to the students. This is different from the traditional case study method developed and used by most business schools. The strategy we propose is essential because of the multidisciplinary nature of the real-world problems that the multimedia case studies address. Therefore, it is important to provide background material on the disciplines that have a significant role in the case studies. If concepts that are part of the competency materials are included on the knowledge assessment, the instructor may want to administer the knowledge assessment during the class session in which the competency materials are to be reviewed or assigned (but before reviewing or assigning the competency materials). If they are not included, the instructor can administer the knowledge assessment during the class session in which the case introduction takes place (but before introducing the case study). The instructor may tell students how they scored on the knowledge assessment, but the answers should not be given because the same assessment will be used again at the conclusion of the case study. Instructors should be aware that sometimes students who score well on the knowledge assessment walk away with feelings of superiority, which can create problems later when assigned to teams.

The instructor may also use one of several approaches to introduce the case study. The instructor may use the case teaching notes, which are included on the instructor's CD, as a guide. The teaching notes provide a summary of the case study, statements of objectives, teaching suggestions, and discussion questions with suggested answers. This approach is the same as what an instructor using the traditional case method would do. However, the method we recommend deviates from the traditional case method. We recommend that instructors provide a brief overview of the case study and segue into using individual videos and animations from the CD to acquaint the students with the specifics of the case. This approach requires the instructor to operate more as a spokesperson rather than an expert.

## **TEAM BUILDING EXERCISES**

Teaming exercises and guides, which are included in the hardcopy of the case study book, which includes the CD, can help improve group interaction. The exercises also help students understand and appreciate team dynamics and how each person can successfully contribute to a team. We recommend allowing students to attempt the exercises alone for a period of time and then allowing them to work with others in the class. After these exercises, students can discuss the advantages and disadvantages of working in teams.

## **TEAM AND CASE ASSIGNMENT**

One of the things we suggest instructors do before assigning teams is collect information from students about their background, both educational and work. Instructors should use the information to ensure that team composition is based on what each student can contribute to the case analysis rather than on friendships and prior relationships. In other words, instructors should assemble the teams and not leave that task to students. If the class consists of students from multiple disciplines, we suggest building cross-functional teams that are diverse from multiple perspectives, such as gender, ethnicity, and aptitude. We also recommend that instructors choose each team's leader or project manager. Instructors can provide opportunities for different students to lead the team for different case studies, thereby providing many students the opportunity to develop and improve their leadership skills. The instructor should emphasize that he or she expects all students to read all the details of the case; otherwise students might only read a portion of the case study, greatly limiting their ability to adequately analyze the problem.

Before assigning a problem to each team, it may be helpful if the instructor reviews the competency materials assigned in a previous class session. The instructor should urge students to raise questions about the readings that pertain to the competency materials. It may also be beneficial to have students work with their teammates to identify areas of concern and knowledge gaps relative to the competency materials.

The instructor's CD contains possible solutions to the problem in the case. Each possible solution or series of possible solutions can be assigned to the teams. Each possible solution focuses on a different aspect of the overall problem. Instructors can use the possible solutions as is or may modify them. However, for those using a particular case for the first time, it is probably best to follow the guidelines provided on the Instructor CD and assign the possible solutions to each team as illustrated. If the instructor has used the case before, he or she may wish to modify the assignments for each team. Alternatively, the instructor could assign all teams the same set of possible solutions to investigate, or provide the teams with no possible solutions at all. The decision of which approach to take depends on the level of difficulty the instructor wants to bring to the case analysis and the environment he or she would like to create in the course.

### **Each Team Assigned a Different Role**

This approach minimizes the vagueness of what each team should investigate, but it increases the likelihood that each team will communicate with the other teams. Because each team is responsible for a unique part of what could be the overall solution to the problem, they must rely on the insights of the other teams in order to get a better understanding of all possible alternatives, or at least those being investigated.

### **All Teams Assigned the Same Role**

This approach also minimizes the vagueness of what each team should investigate, but it increases the level of competition among the teams. Therefore, it decreases the likelihood that each team will communicate with the other teams.

### **No Roles Assigned, Open Analysis of Case Study**

This approach adds complexity to the case analysis because teams are not guided toward possible solutions. Whereas this approach could potentially increase the likelihood that each team will communicate with the other teams, it definitely increases the level of competition among them.

To add to the intensity of the case analysis, instructors may opt to have one team serve as the final authority or executive team. The executive team is responsible for hearing each team's recommendations and rendering the final decision. They should also be prepared to question the other teams during their presentations. We will discuss the presentations further in a subsequent section (i.e., the section titled case study presentations).

## **TEAM CASE DISCUSSION**

Although the instructor can lead the case discussion and students can participate at the instructor's discretion, in our experience, a better approach is to have students discuss the case with the members of their assigned team. This approach enables students to brainstorm and use other teamwork strategies to discuss findings, identify alternatives, and ponder solutions to the case study problem. The instructor should emphasize participation by all team members and act as a facilitator and explorer of the case analysis rather than a master and expert. It may be best to start the case discussion with inter-team discussions. The instructor must ensure that the students do not steer the class discussion into unrelated topics. One of the more daunting tasks for the instructor is continually encouraging the students to work as a team, even during the inter-team discussion sessions. That includes ensuring that all members of the team participate to the same degree (or as close to the same degree as possible). The instructor may also choose to encourage the students to use other communication technologies, such as e-mail, discussion forums, chat rooms, and instant messaging applications, to continue the dialog outside of class.

After the inter-team discussions, the instructor should have students start intra-team discussions. During the intra-team discussion sessions, we recommend that the instructor act as an observer. The instructor should sit in on each team's conversations and should only participate when the students need clarification about the facts of the case. Students usually navigate through the CD exploring and analyzing the multimedia content related to their various topics. The sitemap on the CD helps students quickly identify and jump to topics and content.

## **ELECTRONIC JOURNALS**

To keep track of students' development and progress on the case analysis, we recommend the use of electronic journals, also known as e-journals (see Appendix I). The included e-journal consists of eight questions, which assess students' progress with the case material and the impact the case analysis has on their personal and professional development. Instructors should have students turn in at least two e-journals per case. Our standard recommendation is that students answer the first seven questions for the first e-journal and answer only question eight for their final e-journal entry. However, if a greater level of granularity is desired, it is best to have students answer all eight questions for their final e-journal entry instead of just question eight. The latter approach allows the instructor to gauge how various aspects of the case or materials have helped or hindered student learning over time. If following one of the shorter lesson plans for the case analysis, we recommend asking the students to answer all eight questions. In addition to providing the instructor feedback about students' progress, the e-journals help the students evaluate their own learning throughout the case analysis. To derive full benefit from the case analysis, students should be encouraged to exchange their e-journals with colleagues and asked to identify in both their entries and others' entries how major course concepts were applicable to the case study.

## **CASE STUDY PRESENTATIONS**

Students should be required to present their findings and recommendations during week 4 of the five-week plan. This allows the executive team a week to consider the teams' recommendations before rendering a final decision. Another approach, which is more suitable for the shorter lesson plans, is to have all teams present during the final case study session. We also recommend that teams make their presentations in a competitive environment in which teams challenge each other's recommendations. Another approach, which has proved to be successful, is to have one or two groups act as the executive team and the outside stakeholders of the company. In this approach, each team makes its recommendations to the executive team, and the executive team makes the final decision and presents that decision to the outside stakeholders. The instructor should encourage students to use various multimedia technologies in their presentations, while maintaining professionalism. The instructor may choose to interject an epilogue to provide closure to the class session.



In addition to each team giving an oral presentation, we suggest the instructor require each team to submit a written business proposal. This will provide students the opportunity to learn how to articulate their findings and recommendations to senior management. It also helps to improve students' communication skills and gives instructors flexibility in evaluating each team's recommendations. We have included an example of a presentation evaluation form in Appendix III.

### **FEEDBACK SESSION**

The feedback session typically takes place toward the end of the last case session. During this session, the instructor should discuss each team's recommendations, provide feedback on their oral presentations and business proposals, and discuss the decisions made by the actual company. When informing students of the direction taken by the actual company, we recommend making use of the supplemental videos that are on the instructor CD. The supplemental videos contain details about the decision made by the company. In many cases, the videos reveal the rationale of those who were responsible for making the decision.

### **VIII. EVALUATING STUDENT PROGRESS**

After using multimedia instructional materials in IS classrooms, the next major issue is evaluating the students' progress and performance. This evaluation might include the e-journals, presentations, and case study write-ups/business proposals. The instructor should create an evaluation formula and share it with the students before the completion of the case study. The clearer the instructor's objectives are to the students, the better the chances are that his or her expectations will be met. It is critical to establish a mechanism to provide feedback to the students about their performance. Evaluation questionnaires similar to the ones used in previous studies [Bradley et al. 2007; Mbarika et al. 2003] can provide valuable information on the usefulness of the case studies used in the instructor's classrooms. Appendix II contains an analysis, performed by an independent investigator, of the e-journals received in an undergraduate IS course.

### **IX. CONCLUSION**

This tutorial shares rationales for using multimedia instructional materials and provides instructions on how to use these materials in IS classrooms. It also includes practical advice for those interested in using multimedia instructional materials and outlines the process of evaluating students in the use of these instructional materials. Research studies show that using multimedia instructional materials in IS classrooms has the potential to provide enhanced opportunities for active learning and development, improvement in students' higher-order cognitive skills, and improvement of teaming skills. In addition, initial studies indicate that these instructional materials stimulate the interest of students, especially non-technical, female, and minority students, in engineering and technical topics and concepts related to IS [Bradley et al. 2007; Mbarika 1999; Mbarika et al. 2003; Mbarika et al. 2001; Raju and Sankar 1999]. Although further research is needed to validate these findings, the results of these studies have major implications for attracting women and minorities to technology-related disciplines such as engineering and IS.

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## REFERENCES

- Alexander, S. (2001). "E-learning Developments and Experiences," *Education + Training* (Vol. 43) 4/5, pp. 240-48.
- Barrett, E. (1988). *Text, Context, and Hypertext*. Cambridge, MA: MIT Press.
- Bradley, R. V., C. S. Sankar, H. R. Clayton, V. Mbarika, and P. K. Raju. (2007). "A Study on the Impact of GPA on Perceived Improvement of Higher-Order Cognitive Skills," *Decision Sciences Journal of Innovative Education* (5) 1, pp. 151-168.
- Chen, C. (2000). "Using Realistic Business Data in Teaching Business Problem Solving," *Information Technology, Learning, and Performance Journal* (18) 2, pp. 41-50.
- Collier, G. H. (1987). "Thoth-II: Hypertext with Explicit Semantics," *ACM Conference on Hypertext, Chapel Hill, NC, 1987*, pp. 269-289.
- Davis, F. (1999). *Strategic Management Instructor's Manual*, 7th edition. Upper Saddle River: Prentice Hall.
- Delany, P. and J. K. Gilbert. (1991). "Hypercard Stacks for Fielding's Joseph Andrews: Issues of Design and Content," in P. Delany and G. Landow (Eds.) *Hypertext and Literary Studies*, Cambridge, MA: MIT Press, pp. 287-298.
- Fetterman, R. (1997). *The Interactive Corporation*. New York: Random House.
- Gaytan, J. A. and J. R. Slate. (2002/2003). "Multimedia and the College of Business: A Literature Review," *Journal of Research on Technology in Education* (35) 2, pp. 186-205.
- Gorgone, J. T., P. Gray, D. Feinstein, G. M. Kasper, J. N. Luftman, E. A. Stohr, J. S. Valacich, and R. T. Wigand. (2000). "MSIS 2000 Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems," *Communications of the AIS* (3) 1.
- Guzdial, M. and E. Soloway. (2002). "Teaching the Nintendo Generation to Program," *Communications of the ACM* (45) 4, pp. 17-21.
- Hingorani, K. K. and C. S. Sankar. (1998) "Teaching Project Management Through an Information-Technology Based Method," *Project Management Journal* (29) 1, pp. 10-21.
- Jonassen, D. H. (1989). *Hypertext/Hypermedia*. Englewood Cliffs, NJ: Education Technology Publications.
- King, N. G. (2000). "Preparing High School Students for the New Millennium and Beyond," *Education* (121) 1, pp. 4-7.
- Larkin-Hein, T. and D. A. Zollman. (2000). "Digital Video, Learning Styles, and Student Understanding of Kinematic Graphs," *Journal of SMET Education* (1) 2.
- Lim, K. H. and I. Benbasat. (2000). "The Effect of Multimedia on Perceived Equivocality and Perceived Usefulness of Information Systems," *MIS Quarterly* (24) 3, pp. 449-471.
- Mbarika, V. (1999). "An Experimental Research on Accessing and Using Information from Written versus Multimedia Systems," *Fifth Americas Conference on Information Systems, Milwaukee, WI, 1999*, pp. 502-504.
- Mbarika, V., C. S. Sankar, and P. K. Raju. (2003). "Identification of Factors that Lead to Perceived Learning Improvements for Female Students," *IEEE Transactions on Education* (46) 1, pp. 26-36.

Mbarika, V., C. S. Sankar, P. K. Raju, and J. Raymond. (2001). "Importance of Learning -Driven Constructs on Perceived Skill Development when Using Multimedia Instructional Materials," *Journal of Educational Technology Systems* (29) 1, pp. 67-87.

Nielsen, J. (1995). *Multimedia and Hypertext: The Internet and Beyond*. Boston: AP Professional.

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

Oliver, R. and A. Omari. (1999). "Investigating Implementation Strategies for WWW-based Learning Environments," *International Journal of Instructional Media* (25) 2, pp. 121-136.

Raju, P. K. and C. S. Sankar. (1999). "Teaching Real-World Issues Through Case Studies," *Journal of Engineering Education* (88) 4, pp. 501-508.

Sankar, C. S. and P. K. Raju. (2002). "Bringing Real-World Issues into Classrooms: A Multimedia Case Study Approach," *Communications of the AIS* (8) 2, pp. 189-199.

## **APPENDIX I. ELECTRONIC JOURNAL**

**Name:**

**Course Name and Number:**

**Case Study:**

**Date:**

1. What questions or comments came to your mind as you progressed through the material?
2. What surprised, interested, or impressed you about your progress on the material?
3. What did you learn while you were working on your material, and how did you feel about it?
4. What did you find most difficult to tackle while you were working on the material?
5. If you were to give advice or directions to someone new to this material, what helpful hints would you offer?
6. What aspects of the material have you enjoyed thus far, and why did you enjoy it so much?
7. What information did you learn from the material that you predict you could use in your future career?

*For your final entry per segment of class material, please respond to the following:*

8. As a result of the material you just completed, what have you learned about yourself as a problem solver, business student, and IS professional?

**APPENDIX II. ANALYSIS OF AUCNET E-JOURNALS**

The AUCNET USA multimedia case study was used at a large southeast university in the Principles of Telecommunications course, in which e-journals were analyzed and summarized by an independent investigator. There were 53 students in the class, and the e-journals had eight questions. The e-journals were completed at two points in time. The participation yielded 673 responses, from which the investigator identified five dominant themes, represented in the pie chart following.

The most dominant theme that emerged was that of Coursework and Strategy (238 of the 673 responses). The students found the multimedia instructional materials to be interesting and an “informative and fun learning experience.” The simplicity and straightforwardness of the course enabled some of the students to “catch on to the material quickly” and “very easily absorb all the information of [the course].” From the responses, the course appeared to offer “great insight into technology.” Some of the students found the OSI model, the technical terms, and the acronyms to be challenging while others had minimal difficulty in “understanding” and “grasping” the problem. When asked about the different strategies they followed and their advice to future students, many of the responses indicated that the students needed to be punctual and take notes, as well as other suggestions like “don’t let the material overwhelm you” and “don’t be discouraged with the sudden overload of information.” Students found that “learning some of the finer details,” “tech notes,” “material presented,” and the use of “telecommunication in the REAL WORLD” were some of the highlights of the coursework.

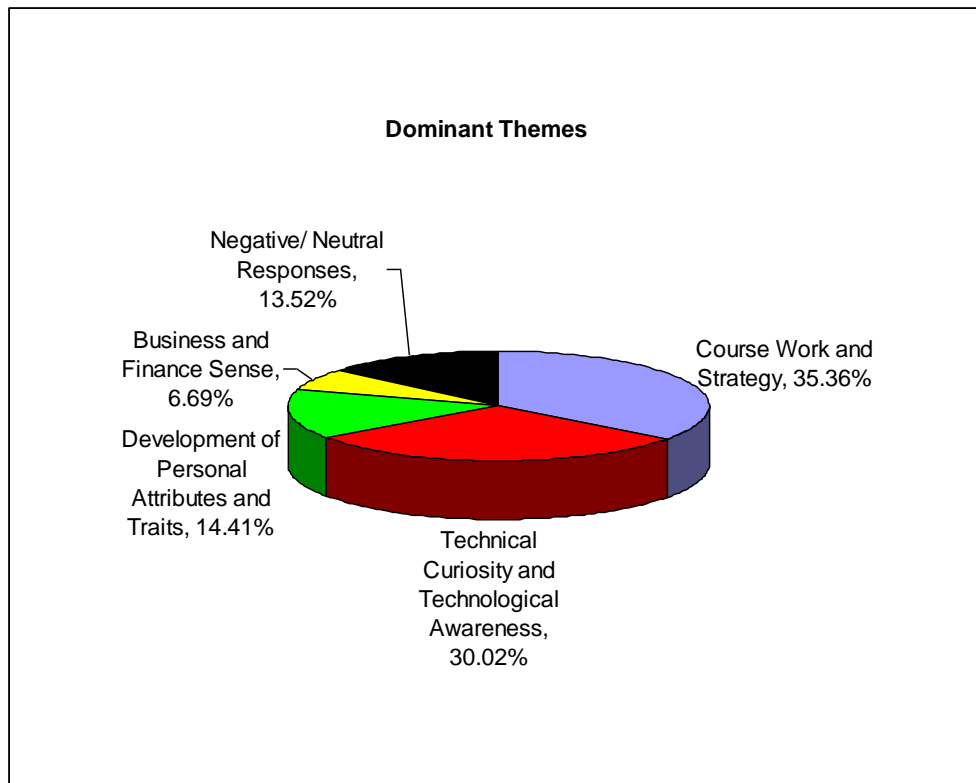


Figure 1. E-Journals’ Dominant Themes

The next dominant theme that emerged was that of Technical Curiosity and Technological Awareness (202 of 673 responses). Comments such as “became more curious about telecommunications,” “linking continents with fiber optic connection,” “what will be next in telecommunication technology?” and “how does technology affects my life?” indicate a certain arousal of technical curiosity. As the course progressed, the students “began to understand more and more of the technical stuff,” “have been very surprised about how interesting telecommunications is,” “surprised at how cellular technology works,” and “learned a lot of [information about] firewalls, phone lines, modems and how to access the Internet.” Also, when it came to telecommunications, students realized how “some businesses use telecommunications to bid prices for products,” “telecommunications plays a big role in the business world,” “telecom can work in a business environment.”

Development of Personal Attributes and Traits (97 of 673 responses) forms the third largest piece of the pie chart. Responses such as “I can’t do it by myself, I need help from others to solve the problem,” “Two minds are better than one, even if the other mind isn’t as sharp as your mind, or likewise,” “I would require help from others to evaluate a problem,” and “I work better when I am participating in team work” indicate the development of and the need for teamwork or group work. Also, many students appeared to have developed problem-solving skills, as evident from responses such as “I have a decent ability to solve business problems using my knowledge of telecom,” “I am pretty good at solving problems such as with AUCNET and the labs,” “I can problem solve for a business solution,” “I could solve a good deal of the problems that might be thrown at me in the MIS world,” etc. Apart from the development of problem-solving skills, various attributes like inquisitiveness, competitiveness, persistence, professionalism, resourcefulness, and work ethics were also developed. Development of Business Sense and Financial Strategies is the next largest positive theme in the pie chart (45 of 673 responses). “Using different types of mediums to cut cost,” “technical details of the business environment,” “match up to supply and demand,” and “recognize problems and provide business solutions” are some of the business-related responses that were cited. The students noticed the importance of telecommunication in the business field, and this was visible in responses such as “Every type of business today uses some form of telecommunications,” and “Telecommunications is one of the most important aspects of business,” etc. “Business type principles seem to come pretty easy to me,” “I am a better business student after completing the material,” “I learned that as a business student, all the information that I have gained thus far in my education builds,” and similar responses show the interest generated by the students as a result of the case study.

The class also had its share of negative/neutral responses (91 of 673 responses). Some of the responses were aimed at the conventional textbook used to provide a theoretical foundation for the case study. The responses included, “The book is a major weakness because it is hard to understand,” “I think the only weakness of the class is the book,” and “The book was useless.” The other weaknesses that were mentioned were time constraints, quality of material covered, lack of visual or hands-on aspects, and lack of class interaction.

Overall, the LITEE multimedia instructional materials seemed to be favored by the students and had an overall positive effect on the course. The mood of the class can be summarized in one remark by a student, who said, “Business makes the world go round and it is the field to be in!”

**APPENDIX III: FORM FOR EVALUATING CASE STUDY PRESENTATIONS**

<i>Case Presentation Evaluation Form [adapted from Davis, 1999]</i>					
<b>Case Study:</b>					<b>Date:</b>
Presenting Team Members:					
Place comments after each rating			Ratings (circle the appropriate numbers)		
<b>CONTENT</b>	Poor	Below Average	Average	Above Average	Superior
1. Problem statement and identification of criteria	1	2	3	4	5
2. Thoroughness, accuracy, and depth of analysis of technical factors	1	2	3	4	5
3. Thoroughness, accuracy, and depth of analysis of non-technical factors	1	2	3	4	5
4. Identification and evaluation of alternatives	1	2	3	4	5
5. Quality, quantity, feasibility, and relevance of recommendations	1	2	3	4	5
6. Justification and support for recommendations	1	2	3	4	5
7. Innovative/interest generated	1	2	3	4	5
8. Connection to theory	1	2	3	4	5
<b>DELIVERY</b>					
1. Organization of presentation	1	2	3	4	5
2. Professionalism of presentation	1	2	3	4	5
3. Use of visuals and color	1	2	3	4	5
4. Communication skills of team	1	2	3	4	5
5. Use of time	1	2	3	4	5
6. Handling of questions	1	2	3	4	5
<b>OVERALL EVALUATION:</b>	1	2	3	4	5

**ABOUT THE AUTHORS**

**Randy V Bradley** is an Assistant Professor in the Department of Accounting and Information Management at The University of Tennessee, Knoxville. He holds a B.S. in Computer Engineering, an M.S. in MIS, and a Ph.D. in Management of Information Technology and Innovation, all from Auburn University. Dr. Bradley's research has appeared, or is forthcoming, in the *Journal of Management Information Systems*, *Decision Sciences Journal of Innovative Education*, the *Journal of Computer Information Systems*, *International Journal of Networking and Virtual Organizations*, and the *Encyclopedia of Multimedia Technology and Networking*. His

research interests include the strategic value of enterprise architecture, diffusion of information technology in the healthcare domain, strategic information systems planning, and innovative technologies that facilitate improvement of students' teaming and dynamic decision-making skills.

**Victor W. Mbarika** is on faculty in the College of Business at Southern University and A&M College and is an information and communications technology (ICT) consultant. He holds a Ph.D. in Management of Information Technology and Innovation from Auburn University. His research on ICT diffusion in developing countries and his research on multimedia learning has been published (or are forthcoming) in 32 academic journals, four book chapters, and over 50 national and international conferences publications on Information Systems. He is also author of three academic books. Dr. Mbarika is Founder of the Cameroon Computer and Network Center (CCNC). He is a member of the Association of Information Systems (AIS), the Institute of Electrical and Electronics Engineers (IEEE), and the Information Resources Management Association (IRMA).

**Chetan S. Sankar** is the Thomas Walter Professor of Management at Auburn University's College of Business. He received his PhD from the Wharton School, University of Pennsylvania, and has worked at Temple University and at AT&T Bell Laboratories. He is a Principal/Co-Principal Investigator of seven National Science Foundation grants budgeted at more than two million dollars. The objective of these grants is to develop exceptional instructional materials that bring real-world issues into engineering and business classrooms and to improve the higher-level cognitive skills of students. In addition to his current research and teaching interests, Dr. Sankar has published more than 100 papers in journals, book chapters, and conference proceedings. He has won many awards for research and teaching from the Society for Information Management, NEEDS and John Wiley and Sons, Decision Sciences Institute, American Society for Engineering Education—Southeastern Section, American Society for Mechanical Engineering, Auburn University, and the Project Management Institute. He is also the incoming editor-in-chief of the *Decision Sciences Journal of Innovative Education* and the managing editor of the *Journal of STEM Education: Innovations and Research*.

**P. K. Raju** is the ThomasWalter Distinguished Professor and Assistant Chair in the Mechanical Engineering Department at Auburn University. He is also the Director of the Auburn Engineering Technical Assistance Programme and the Laboratory for Innovative Technology & Engineering Education (LITEE). He has directed and managed various research and development projects totaling over \$5.4 million in the areas of acoustics, vibration, noise control, nondestructive evaluation, technology management, and engineering education and has published numerous books and research papers. He is one of the two editors-in-chief of the *Journal of STEM Education: Innovations and Research*. Dr. Raju was the recipient of several awards and recognitions from different professional societies and the United Nations. His pioneering research effort with his colleagues in LITEE in bringing real-world issues into the engineering and management classrooms through multimedia case studies has been recognized by both industry and educational leaders as an innovative technique.

**Bangaly Kaba** is a research fellow in the College of Business at Southern University A&M. His research interests include the adoption and implementation of information and communication technologies (ICT) in developing countries, especially mobile technologies, the impact of ICT on organizations, cultural issues in ICT adoption and use, tele-education, quantitative methods, and management of international projects. Dr. Kaba's has been published in *The Electronic Journal of Information System in Developing Countries*.

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