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RADICALLY REDESIGNING INTRODUCTORY MIS LARGE-SCALE LECTURES: CREATING ENHANCED LEARNING ENVIRONMENTS

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Abstract:

Traditional introductory Management Information Systems (MIS) large-scale lecture course models include a textbook, PowerPoint slides, and electronic files of exam questions utilized for assessing students' understanding of the topics. Today's Business professionals are required to think critically and apply explicit and tacit knowledge. The MIS department recognized that this traditional large-scale lecture format was not sustaining student engagement and it was evident that students were not developing these critical business skills when MIS professors were prescribing to the traditional textbook methodologies. The MIS Department revisited the traditional large-scale lecture-based format and created a new classroom curriculum centered on Activity Based Learning and conceptualized an Active Learning Funnel incorporating three dimensions: Technology, Content and Activity which form an Enhanced Learning Environment.

Keywords: Active Learning, Enhanced Learning Environment, Activity Based Pedagogy, Traditional Learning, Traditional Textbook, Traditional Lecture, Large-scale Lecture, Management Information Systems (MIS)

I. INTRODUCTION

Creating captivating course content is a common goal when developing large-scale lecture-based instruction. Traditional methodologies center on the adoption of a course textbook, complete with exams, PowerPoint slides and on-line resources. While these classroom environments provide students with the prescribed content, a traditional lecture format promotes a low-hanging fruit mindset and student attention and retention wains [Keyser, 2000]. Even more problematic, students tend to leave these traditional lectures without the critical thinking skills required to apply the course material to the business disciplines in their field of study.

A key ingredient to sustaining student engagement in large-scale lectures is the incorporation of an Activity Based learning approach. Ben Franklin is quoted as saying "Tell me and I forget. Teach me and I remember. Involve me and I learn." Capturing and maintaining student interest through involvement enhances the learning experience and provides a more engaging learning environment. Incorporating Active Learning techniques fosters a distinct dialogue between student and professor, promoting critical thinking, a core component of an Enhanced Learning Environment. We define this Enhanced Learning Environment as a distinct dialogue between practitioner and student incorporating Technology, Content and Activity to promote critical thinking.

In this paper, we describe how a Management Information Systems (MIS) Department in a large University revisited the traditional large-scale lecture-based format and created a new classroom curriculum centered on Activity Based Learning and conceptualized an Active Learning Funnel incorporating three dimensions: Technology, Content and Activity which form an Enhanced Learning Environment. This paper reflects on the pedagogies of Lecture and Activity Based

Learning, introduces new dynamic course content and discusses the shift in the MIS Large-scale Lecture experience for the student and professor.

II. TRADITIONAL MIS LARGE-SCALE LECTURE LEARNING

The department's original large-scale lecture introductory course followed a traditional model using a textbook with its ancillary materials such as PowerPoint lecture slides and an electronic file of exam questions and quizzes. Each week instructors delivered the course based on the prescribed method of the textbook publishers, including PowerPoint slides and lectures.

Traditional Large-Scale Lecture

This course was taken by approximately 2,400 students each academic year. A core undergraduate business class, the student population was represented primarily by each business school major and included students from other campus programs too. The large-scale lecture format was chosen to accommodate this student population. This student population shied away from discussion and interaction. They developed a reticent behavior pattern which stymied professor and student communication and collaboration [Janson et al., 2014]. Materials presented in class followed the prescribed traditional textbook tools; however, the students were not interested in interaction. Their primary concern was the exam and covering the glossary of terms discussed in the provided text [Keyser, 2000].

Traditional Textbooks

The traditional textbooks present three core problems: rising average costs, prescribed course flow and updateability. Textbooks may range in cost up to \$125 which coupled with rising tuition and housing costs creates another burden for students. The rate of technology change becomes problematic for traditional textbooks to correct and capture. New and/or revised content may take months or years to correct and update. As professors of MIS, many felt that the content was dated and felt that students were losing interest due to the outdated nature of what was presented. Many newer textbooks utilize companion website to manage updates; however, students are reluctant to take advantage of this additional resource. The textbooks provide encyclopedic overviews and highlighted glossaries and terms; however, they do not provide the tools to weave a cohesive story from class to class or connect-the-dots across the entire semester. Topics are designed as stand-alone sections without the continuity required to connect MIS concepts across an entire semester [Miller and Baker-Eveleth, 2009]. When anecdotally speaking with industry executives, it is the critical thinking skills of students that they value, rather than the ability to recite vocabulary words learned from a textbook. In his paper on Critical Thinking in business schools, Gerald Smith investigates the need for including activities in business school that will lead to deeper thinking for students. Per Smith (2003), business schools do not typically utilize textbooks or courses for teaching critical thinking, but rather incorporate critical thinking exercises into the classroom, through case study and activities that may be conducted during sessions. The faculty in the MIS department felt as though there was much that could be done to teach students to think about how technology is applied to the workforce, to the organization, to the employees as a means to increase efficiency, rather than just reading about it in a textbook.

Traditional Environment

Students were evaluated with tests created from or provided by the traditional textbook publishers that focused on the textbook's highlighted vocabulary words rather than the student's ability to apply the knowledge they had gained in class. The department's goal for students to understand how the underlying processes, workflows and technologies are applied in organizations was being undermined by the students' focus on the low-hanging fruit provided by the textbook summaries and keyword searches. Lectures following the traditional textbook content were met with growing student complacency and facilitated the student's process of memorization and regurgitation [Keyser, 2000].

This delivery model included homework assignments that focused on using an Enterprise Resource Planning (ERP) tool. ERP systems evolved and updated; however, the assignments did

not. Each semester, 1,200 students partook in an assignment that was no longer relevant and did not complement the student's classroom experience or overall comprehension of MIS course concepts. These assignments were components of the traditional textbook model's tool-kit that accompanied the course textbook. The traditional textbooks associated assignment tools were not able to pivot quickly enough [Miller and Baker-Eveleth, 2009].

The department compensated for this shortcoming by creating an interconnected assignment where students were charged with creating a digital portfolio documenting their academic and professional accomplishments. The digital portfolio was better received by the students, whose feedback confirmed that they found value in this digital portfolio exercises. The department's review of the portfolios indicated that this was the assignment where students were applying course concepts. The evidence was indicated in the submitted assignments were students provided narrative feedback explaining how they used Information Systems (IS) tools rather than restating rote memory facts and definitions.

The department recognized that the traditional large-scale lecture format was not sustaining student engagement. The curriculum did not encourage critical thinking and the application of knowledge. It was evident that students were not developing these critical skills, the ability to apply technology solutions in a business environment, when MIS professors were adhering to the traditional textbook methodologies. The initial success of the digital portfolio Active Learning project appeared to be the foundation for a new learning environment.

III. ACTIVITY BASED PEDAGOGY

Initial Concepts

The research literature documenting the Active Learning pedagogy appears in various forms dating back to 1924; however, the concept and its modern classroom incarnation began taking form in the 1980's and firmly established by Bonwell and Eison's (1991) seminal work in Active Learning. Active Learning can be defined as students engaging in hands-on problem solving where the results require cognitive reasoning to achieve a solution [Bonwell and Eison, 1991]. The active learning palette includes formats for discussion, debate, drama, teamwork, simulation and investigation. Active Learning pedagogies are vast and varied and the literature provides a cornucopia of concepts [Bonwell and Eison, 1991]. The techniques and implementation of these Active Learning concepts vary based on the course content, instructor, university and student population [Keyser, 2000]. Applying the Activity to the course material and connecting the learning takeaways is the key consideration.

According to Cook-Sather, there are Five Pedagogical Practices that promote Active Learning. The practices are identified below with insights from our findings [Cook-Sather, 2011].

1. Reflecting on Practice – Professors engage students in discussion based on their own relevant industry experience or industry and organizations familiar to the students. Professors complement the course topics with relatable industry anecdotes that tie course concepts to in the field scenarios.
2. Developing Meta-Cognitive Awareness and Finding a Language for It – each classroom takes on its own personality. Professors are inherently aware of the varying personalities and adapt accordingly. Professors are encouraged to share their course narratives to improve their own classroom dialogue
3. Modeling and Explaining – Professors consider the material being taught and prepare the thought process that they want the students to learn. Encourage students to actively engage in the presentation of solutions to the class. Professors are free to select an engagement style best suited to their strengths to generate participation and interaction.
4. Engaging in Pedagogical Transparency – communicate with the students why this learning is important. Establishing an open dialogue with the students builds trust and informs expectations.

5. Inviting Students to Engage in Reflection and Dialogue – Enable the students an opportunity to assess their learning (note, this is encouraged in the in-class activity feedback). Let students know they are part of the process and can impact change.

Recognizing when and how to implement the Five Pedagogical Practices in a large-scale lecture environment requires careful consideration, planning, reflection and refinement. This fine-tuning process includes a cultivation of data from previous semesters [Cook-Sather, 2011]. Course evaluation is collected twice a semester in the form of Student Feedback Forms and mid-semester Teaching & Learning Evaluations.

Large-Scale Lecture Classroom Evolution

The Large-Scale Lecture Classroom continues evolving and traditional learning approaches of lecture and listening are now complemented by the digitalization of the classroom; e-learning and electronic media. The incorporation of technology lead to a personalized learning approach. Personalization is further reinforced in a flipped or inverted classroom [Melzer, et al., 2017].

Active Learning techniques reinforces this personalized learning as described by Allred, et al. (1997). There is a distinct dialogue between student and professor, promoting critical thinking, a core component of an Enhanced Learning Environment [Allred et al., 1997]. The combination of the aforementioned pedagogical Active Learning concepts, techniques and practices led to our conceptualization of an **Active Learning Funnel** incorporating three significant dimensions: Technology, Content and Activity that form an Enhanced Learning Environment.

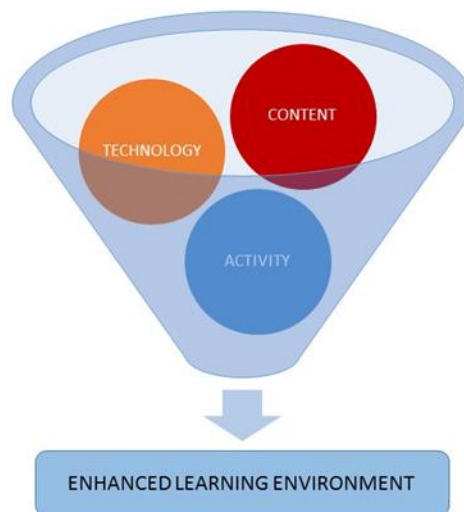


Figure 1: The Active Learning Funnel

Table 1. Learning Goals mapped to the Active Learning Funnel's Three Dimensions

Learning Goal	Technology	Content	Activity
Apply MIS specific concepts to business situations and problems	Engage with CRM software, Salesforce	CRM videos CRM Lecture CRM PowerPoints Narrative around CRM	Complete activity and assignments which ties directly to CRM concepts Hands on experience using CRM software
Develop critical thinking skills through the analysis of business processes incorporating the MIS systems that support them	Combination of video vault and in-class videos	Narrative around the business models relevant to the class	Create & Analyze Entity Relationship Diagram (ERD) and Swim Lane Diagrams
Develop quantitative reasoning skills by assessing the value of MIS systems in organizations	Combination of video vault and in-class videos	Narrative around the decision to switch systems	Complete in-Class Activities focused on Income Statement changes related to acquiring modern technology
Develop visual communications skills while learning to model business processes, the information required to perform these processes, and the systems that support these processes	Combination of video vault and in-class videos	Provide a relatable business scenario that students can read and analyze to create the business process diagrams	Create & Analyze ERD, Conceptual Diagram and Swim Lane Diagram Generate & Analyze decision trees

Active Learning Funnel: Course Planning and Strategies

Utilization of the Active Learning Funnel reinforces the Enhanced Learning Environment. These strategies require immersive and experiential engagement. Content is communicated in an open-ended format inviting critical thinking, reflection and emotional intelligence [Bonwell and Eison, 1991]. In their 2011 study of over 1000 undergraduate students, Cardaciotto and Smith (2011) studied students taking the same courses – half in active learning environments and half in traditional lecture only environments. In that same study, the authors found that students placed in the active learning environments had greater retention rates and greater engagement with the material [Cardaciotto and Smith, 2011]. These findings supported the idea that students who interact with the material are far more likely to retain it and develop their own critical thought processes.

Large-scale lecture Active Learning Strategies include three primary assumptions:

Table 2. Traditional MIS Introductory Course Overview & Objectives

Table Adapted from Bonwell and Eison, 1991	
Assumptions	Methodology
Professors implement strategies/methodologies specific to each day's content	Interactive student brainstorming, open ended questions, group work
Presentation tools complement content and foster student engagement	Critiquing content and providing feedback on in class activities
Student involvement and learning will increase when the professor requests students to provide their opinion on the presented content	Facilitate small team debates

Course planning requires content that captures and maintains the student's interest and capacity for learning. Selecting an appropriate Active Learning technique that reinforces concepts and content is critical to classroom success. The professor must identify what the intent of the day's learning objectives are and establish a complete narrative that weaves the materials together in a cohesive story; reinforcing each topics relationship to business and technology [Keyser, 2000]. Critical to the success of an undergraduate MIS class, housed in a traditional business school, is to enable students to make the connections between business and technology that is required in this field.

The MIS introductory course consists of 14 sections including ten 120-student lecture halls. These large-scale lectures did not lend themselves to an engaging environment. These lectures implemented traditional methodologies centering on a single course textbook and associated tools and exams. Observational research indicated that these classroom environments consisted of a professor lecturing from the front with the only interaction stemming from infrequently posed classroom questions or the occasional student raising their hand to ask about the current topic. This is not an active learning environment and does not foster interaction [Keyser, 2000]. While the professor may relay the connection between technology and business, it may be lost on the student, focused on memorizing the terms in the textbook or from the PowerPoint deck.

Implementing the Active Learning Funnel will promote an Enhanced Learning Environment and create the foundation for a flipped classroom without placing additional burden on the professor. With proper planning, coordination, communication and implementation, students will prepare in advance to engage in class discussions [Janson et al., 2014].

Technology

The introduction of the professionally developed videos on core MIS topics enables the students to pre-learn the material that will be covered in class. In each video, professors provide insight and baselines for the topic to be covered. For example, in the Customer Relationship Management (CRM) unit, the professor provides the core concepts of why an organization would choose to implement a CRM and the critical factors that an organization needs to consider for implementation. This laying out of the core concepts enables the instructor to dive in to the material and connect the video, articles and lecture together on the first day of the unit. Prior to class, students can utilize the videos and couple them with the readings to come to class and engage in active conversation with the professor about the core topics. Within the classroom setting, Professors will also introduce directly related videos that bring the topic to life, for example, videos are shown that connect Artificial Intelligence to brands that students already understand and thus, further the engagement and interaction. Students, led by the professor can reflect on the above-mentioned content and the connection made between the core concepts presented in the videos, articles and lecture material.

Content

Utilizing articles from the popular press will provide an engaging, interactive experience for the students. Taking current examples enables the professor to connect course principles with timely, strategic information that creates a direct connection to students' other courses in the business school and their connection to technology. Students also develop skills around reading and processing articles on technology to extract valuable information. Through the professor's weaving of critical MIS topics and today's relevant usage in the marketplace, students can make the connection between academic and business topics. Each semester, the MIS department review the set of articles for each section and make updates based on relevant business topics and current events. For example, Artificial Intelligence (AI) is a rapidly changing topic. Each semester, professors add additional material that focuses on current situations in AI. Students are encouraged to bring in alternative articles throughout the course, often leading to relevant, timely additions to the articles selected by the MIS department.

Activity

Utilizing in-class activities will stimulate interaction sequences. The large-scale lecture transitions from a one to many cardinalities to a many to many learning experiences. This teaching method cultivates interaction by providing a mini-project to the students to solve in-class. Students are encouraged to form teams and the professor is freed from the dais to engage the room.

Activity learning requires an introduction of a problem that relates to the course topic being taught, this is the motivation [Janson et al., 2014]. It is incumbent on the professor to connect-the-dots between the activity, MIS course concepts and impact on the organizations business units. This student-centric approach enhances the lecture quality and increases the student's success and satisfaction. Observed outcomes include increased student motivation, attention and participation, fostering greater collaboration amongst students [Janson et al., 2014]. Active learning also increases student retention since they are discussing and providing their answers back to the classroom and the professor [Cardaciotto and Smith, 2011].

A process flow was developed to identify and implement the Funnel's Activity component:

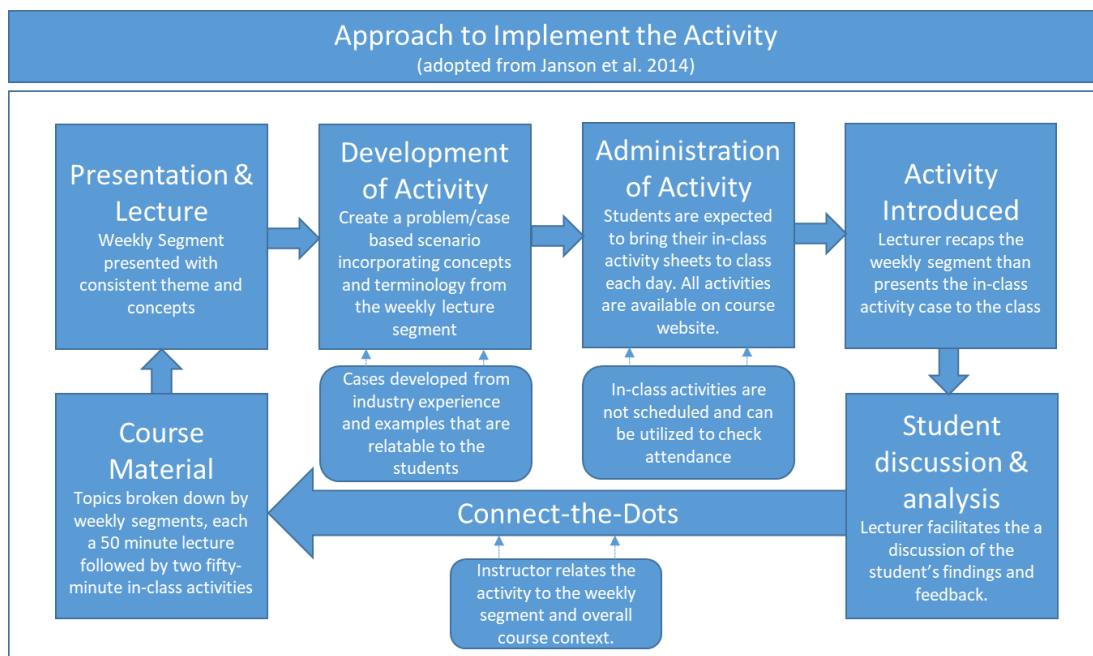


Figure 2. The Activity Implementation Approach

IV. IMPLEMENTATION

The introductory course in Management Information Systems is part of the core undergraduate business curriculum. This course is taken by approximately 2,400 students each academic year in class size that ranges from 30 to 240 students. The latest version of the course centered on the Active Learning Funnel's Enhanced Learning Environment required a radical redesign, including the core concepts that would be included in the new curriculum. The redesign involved four primary steps.

Step 1: Reduction

Reducing the number of topics initially covered by the traditional textbook would allow two thirds of the classroom time to focus on activity-based learning. The Department agreed that the overall goal of the Large-Scale Lecture MIS Introductory course is introducing students to core concepts of Management Information Systems and the need for a common understanding of Management Information Systems and their effect on organization. The sub-goal is for each business student to understand how technology will affect their future roles in an organization, regardless of major. Students are expected to learn, identify and analyze organizational systems and processes utilizing techniques including conceptual diagramming, process decomposition, and data modeling. The intent is for students to gain experience identifying and using the same types of systems & processes employed by organizations ranging from start-ups to global enterprises. Processes taught include analyzing consumer information systems to understand multiple approaches to systems architecture, the power of network effects and platforms, and the importance of digital identity management. Ethical issues related to Information Systems and the role of systems in business organizations and careers are also covered.

The Department revised and refined the topic list to present the intersection of technology and business in a real-world environment and in alignment with the Business School curriculum. This updated course material would be relatable to the business disciplines in each student's field of study (see table 3).

Table 3. Revised MIS Introductory Course Overview & Objectives

Weekly Topics	Learning Objective
Analyzing organizations as systems and processes	<ul style="list-style-type: none"> • CONCEPT: Understand MIS as an enabler of business • CONCEPT: Understand core concepts of MIS • CONCEPT: Understand future career paths in MIS
Modeling Processes with Swim Lane Diagrams	<ul style="list-style-type: none"> • TOOL: Understand processes in an organization and how to map them to a process diagram using conventional modeling tools. • TOOL: Analyze diagrams to optimize for efficiency in organizations
Modeling Data with Entity Relationship Diagrams (ERD)	<ul style="list-style-type: none"> • TOOL: Understand the role of data in an organization, how it is collected, how it is utilized and how to organize it in a conventional Entity Relationship Diagram

Modeling Business Rules with Decision Trees	<ul style="list-style-type: none"> • CONCEPT: Understand Business Rules in an organization, how rules affect process and drive organizational efficiencies • TOOL: Develop decision trees for organizations, based in business rules
Conceptual Architecture Diagrams	<ul style="list-style-type: none"> • CONCEPT: Understand the utilization of Conceptual Architecture Diagrams so that business leaders can easily communicate with all levels of the organization, including IT, around system development • TOOL: Create Conceptual Architecture Diagrams based on a sales narrative
Enterprise Resources Planning (ERP)	<ul style="list-style-type: none"> • CONCEPT: Understand core functions of an Enterprise Resource Planning System and its use in an organization • TOOL: Relate ERPs back to the Swimlane and ERD models to understand how an ERP can streamline an organization • CONCEPT: Identify the types of data collected by an organization within the ERP and how organizations can use the data for better decision making
Supply Chain Management (SCM)	<ul style="list-style-type: none"> • CONCEPT: Understand core functions of a Supply Chain Management System and its use in an organization • CONCEPT: Understand Vendor Managed Inventory, Just In Time Inventory and how they are utilized for efficiency in an organization
Customer Relationship Management (CRM)	<ul style="list-style-type: none"> • CONCEPT: Understand core functions of a Customer Relationship Management System and its use in an organization • CONCEPT: Understand how data and CRM functionality are interrelated and utilized in an organization
Digital Business Innovation Platforms & Cloud Computing	<ul style="list-style-type: none"> • CONCEPT: Understand the digital platform business model and how this developing business model fits into the economy • CONCEPT: Understand network effects and the effect on platform usage • CONCEPT: Understand the several types of cloud computing options available to businesses • CONCEPT: Understand the pros and cons around the cloud computing business model for an organization
Artificial Intelligence (AI)	<ul style="list-style-type: none"> • CONCEPT: Understand the future of Artificial Intelligence and how AI is reshaping the future of business

Step 2: Content

Once the topics were ironed out, the MIS department selected on-line articles from various sources/authors freely available and readily accessible. These articles focused on the core learning objective covered each week. There are typically six articles assigned each week, which may appear extensive to students; however, most of the articles are relatively short and are relatable to students. The elimination of students purchasing a textbook is a value-add. The professor's responsibility is informing the students of the value of the on-line articles in lieu of the traditional lecture learning text.

Step 3: Technology

The elimination of the traditional syllabus was a component of the introduction and inclusion of technology. All course information was now delivered to students utilizing a uniform course site. This standard course site is used for all sections and includes the course structure, schedule, assignments, course PowerPoint slides and gradebook. The course site served two primary functions, providing the MIS Department with a centralized system to uniformly disseminate information and provide students with a working system incorporating MIS course concepts.

As previously discussed, an important technology enhancement was creating and incorporating professionally designed, prerecorded short videos (5-10 minutes each), introducing the students to core course topics. Faculty were solicited for these videos based on their areas of expertise. This selection process led to an added element of lecturer enthusiasm and excitement evident in each video. The short videos provided the students with new faculty connections not available in the traditional large-scale lecture model. Students became familiar with the entire department which reinforced the sense of community within the business school and the MIS department.

Students are asked to also watch these videos prior to the lecture/discussion. These videos are intended to provide students with an additional learning tool designed to reinforce and compliment course topics. As mentioned above, requiring students to watch these videos prior to class, enables professors to spend less time lecturing and more time engaging with students, discussing and applying course concepts together.

Step 4: Activity

In-Class Activity

In-class activities provide a core component of the Enhanced Learning Environment model. These activities are designed to be completed in fifty minutes or less and help students make associations between the activity, MIS course concepts and impact on the organizations business units. Each in-class Activity day is started with a recap PowerPoint slides highlighting key concepts from the week's course content that will be covered in the activity. A series of in-class activities was created to complement the weekly topics. This set of activities is provided to students at the beginning of the semester through the course site.

The course is typically taught three times a week for 50 minutes (Day 1, 2 and 3). Each week of the semester follows this model:

- **Day 1:** Lecture and classroom discussion. Students are asked to read the articles prior to class and engage during the lecture/discussion. Professors pose questions that stimulate discussion and ask the student to apply what they read to real life business cases.
- **Days 2 and 3:** In Class Activities. Students first read the narrative and prepare their response then work with 2-3 students to finalize their answers. The professor guides and engage the students throughout the activity. Students provide written feedback and rating on the activity sheet.

Students are asked to provide feedback on each in-class activity (see the appendix for an example activity), utilizing numerical ratings and narrative writing. The MIS department tracks this information and uses it to update and improve the quality of the activities based on the professor's feedback and the student's written evaluation. Each semester, activities that are out of date, no longer relevant and/or received poor reviews are replaced accordingly.

Individual Assignments

There are five interrelated assignments where students work individually throughout the semester utilizing current technology to reinforce key learnings from lecture and activities. These assignments consisted of students creating an e-portfolio and responding to a business case utilizing Salesforce CRM software. The e-portfolio assignment was a refinement based on the success of the MIS Departments pre-2015 course design.

The MIS department removed the traditional course design's ERP assignment and replaced it with a Salesforce CRM project. The CRM project is relevant to the overall business school curriculum and MIS course goals. The assignment itself is streamlined to provide students with the experience and narrative around utilizing a CRM application, including building an application and looking at data – critical skills for today's business professional.

V. COURSE GRADE COMPONENTS

Table 4. Course Grades Components

Grade Component	Weight	Notes
In-Class Activities (25)	15%	Active Learning Funnel = Enhanced Learning Environment
Assignments (5)	25%	CRM Lab, e-Portfolio Creation (applied use of technology)
Midterm Exam #1	20%	Multiple choice and mini-case (reflections on readings and in-class activities)
Midterm Exam #2	20%	Multiple choice and mini-case (reflections on readings and in-class activities)
Final Exam	20%	Multiple choice and mini-case (reflections on readings and in-class activities)

VI. INITIAL FEEDBACK AND CONTINUOUS IMPROVEMENT PLAN

While the department was excited about this new method of course delivery, the initial feedback from the students indicated that the Enhanced Learning Environment required additional refinement. Students indicated that they had some difficulty synthesizing course content with the activities and many did not appreciate the in-class activities. This is consistent with the previously mentioned study by Cardaciotto and Smith (2011) where the researchers did not find that students who enrolled in active learning classes had a more positive feeling toward the class. This could be explained by the fact that the students resented having to “do something” in the class and not simply read the textbook. The positive feedback indicated that students were pleased that there was no textbook to purchase and that they had access to the entire course content on-line via the MIS course site. Listed below are a synopsis of challenges identified by the students:

1. Reading articles from different authors and sources. These articles do not have a goal of educating undergraduate college students so that they can answer questions on a multiple-choice exam. There can be apparent inconsistencies between articles that confuse students if they don't ask about these inconsistencies during class. The reader is required to connect-the-dots and synthesize knowledge from what appears from the student's perspective to be a disconnected collection of readings. The readings do not lend themselves to helping a student prepare for a multiple-choice exam.
2. Completing their pre-work prior to lecture so they can contribute to class discussion.

3. Actively working and engaging with other students during the in-class activities. On several occasions, the students have anecdotally written in their evaluations that they “wish the professor would just lecture and stop making them work in the classroom.”

Each semester, the articles are reviewed and updated as needed to keep the course current and relatable. This is accomplished by the MIS department working together to select new materials, update the course blog and corresponding weekly lecture slide decks. A flexibility the MIS department did not have previously when using a textbook.

Each semester, students are surveyed around the halfway mark to obtain feedback on the course structure. Students have responded positively that they appreciate the no textbook environment and that the connection of the articles to the course concepts is clear. The feedback from the students has improved each semester as the faculty continue to focus on connecting the information. Students are indicating with regularity that they enjoy the activity-based approach and find the readings insightful. Through the ratings on the in-class activities and anecdotal feedback received from the students, the MIS department make improvements to the activities each semester, with the ratings continuing to rise over the same time period. The students appreciate the use of technology and the engagement with the professor and other students.

VII. CONCLUSION

The transition from the MIS traditional large-scale lecture introductory course model to an activity-based pedagogy required careful consideration of course content, activities and technology. The department developed and implemented the Active Learning Funnel to facilitate this transition and to provide an Enhanced Learning Environment. The MIS department determined that this Enhanced Learning Environment was the best way to present the intersection of technology and business in a real-world environment.

Introducing the Enhanced Learning Environment large-scale lecture format led to some early challenges. Lower than average student feedback evaluations and higher than average student complaints required the department to carefully consider the changes effectiveness. The MIS Department reviewed the feedback and determined that an exerted effort was required to connect-the-dots between the activity, MIS course concepts and impact on the organizations business units.

The revised MIS large-scale lecture introductory course has evolved into a well-received course in the undergraduate curriculum. The flexibility of the articles allows MIS Department professors to iterate and update content each semester incorporating current topics relevant to students and their burgeoning careers.

Another benefit to the updated curriculum delivery method is the ability to mix and match assignments that suit the classroom that semester. The MIS department's ability to pivot away from the traditional methodologies and decades old activity Enterprise Resource Planning technology and instructions, to a fully mobilized, relatable and relevant assignment using a current CRM application. This ability to act nimbly enables the MIS department to provide students with access to current and cutting-edge technologies.

Implementing the Active Learning Funnel has promoted greater classroom engagement. By employing Cook-Sather's approaches to Activity Based Learning, professors can craft a more personalized experience for today's student. Openly requesting and including student feedback in the course improvement process further engages students, providing them with a sense of ownership and connection to the course design. By breaking students in to smaller groups to complete the activities, they can apply the knowledge freely, in a smaller setting, enabling them to freely discuss how the activity or topic relates to them.

Lastly, as technology rapidly changes, this approach to an introductory course allows instructors to keep up with those changes, challenges and demands by adding additional articles and content and removing or updating those that are out of date. There is still additional work to be done in the radical redesign of the Introductory MIS Large-Scale Lecture course; however, the goal of

teaching students the ability to analyze, synthesize and apply classroom topics has been effective and student feedback has improved each semester. Most students now enjoy the activity-based approach; however, there are still a core group of students who would rather follow along with the traditional Large-scale lecture model's textbook and associated tools. The MIS department acknowledges the upward trend of the student evaluation data as a positive sign to continue improving the new classroom curriculum centered on the Active Learning Funnel's Enhanced Learning Environment.

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APPENDIX I. ACTIVITY: SYSTEM ANALYSIS, PROCESS DECOMPOSITION WITH SWIM LANE DIAGRAMS

After completing this activity, you will be able to: Construct a simple swim-lane diagram

Step 1: Individually – Read the Narrative

Step 2: In small groups (2-3) create a swim lane diagram to document this process

Step 3: Draw diagram on board and discuss as a class

Step 4: Rate this activity (individually)

Solution

