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# INFORMATION SYSTEMS EDUCATION JOURNAL

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# Developing an Introductory Level MIS Project in Accordance with AACSB Assurance of Learning Standard 15

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## Abstract

As part of the introductory level management information systems (MIS) course, faculty are asked to introduce the students to MIS concepts as well as to help them develop technology-related skills benefitting them in their course work and beyond. However, with a vast array of MIS topics that could be covered and class time at a premium, it is difficult to determine which MIS topics to address and which ones to forego. Ensuring that the appropriate topics are addressed and adequately covered is tremendously important to the learning process as well as abiding by the learning standards of accrediting institutions. In this study, the author describes a project and survey that was administered to undergraduate junior and graduate MBA students in the core MIS classes in the College of Business undergraduate and graduate level curriculum. The purpose of the study was threefold: to introduce the students to collaborative technologies, determine whether or not students were already familiar with the technology assigned, and evaluate the perceived value of the projects in relation to learning objectives and the projects' use of class time.

**Keywords:** Collaboration Tools, Learning Taxonomy, Assurance of Learning Standards, Curriculum Management

### 1. INTRODUCTION

Developing meaningful projects that illustrate course concepts as well as provide a significant and new learning experience for the students can, at times, be challenging. This is especially true for introductory core major classes in which topics are addressed from different perspectives, i.e. Customer Relationship Management (CRM) may be addressed in both the "Introduction to Marketing" class as well as "Introduction to Management Information Systems" (MIS). Structured coordination between course sections can be difficult and time consuming. Attempting to coordinate projects across multiple disciplines can be creatively limiting, if not impossible. Thus, some topics may be covered in multiple classes, but from a different perspective. Establishing the educational value of projects covering material that could be addressed in other classes may prove beneficial to maximizing the learning experience. In this study, the author examines the process of introducing a topic to students at both the undergraduate and graduate levels, developing projects to facilitate topic learning using learning taxonomies as an educational guideline, and attempting to evaluate the value of the topic in relation to the overall educational experience from the students' perspectives.

### 2. LITERATURE REVIEW

Developing strategies for providing valuable learning experiences for students has been an ongoing concern of educators across a variety of

disciplines for years (Lee et. al, 2007; Lucas, 2001; Ramburuth & Mladenovic, 2004; Shariff, Hasan, Mohamad, & Jusoff, 2010) noted that the approach taken by faculty members teaching information systems quality would be determined by the nature of the course and topics to be covered. Similar findings regarding course structure arose for entrepreneurship courses and students' interest and intentions in becoming entrepreneurs (Shariff et. al, 2010). Strike and Posner (1985) indicated that students learn new accounting concepts when they are able to relate and apply what they are learning to their current ideas and processes. In addition, students' preconceived conceptions of disciplinary topics may also affect students' learning (Lucas & Mladenovic, 2009).

The 2007 Interpretation of the Assurance of Learning Standards published by The Association to Advance Collegiate Schools of Business (AACSB) emphasizes the importance of learning goal setting, outcomes assessment and continuous improvement. The increasing emphasis on compliance with assurance of learning standards, like those established for business schools by AACSB, emphasizes the importance of curriculum management initiatives. AACSB Standard 15 specifically addresses curriculum management as it states, "The school uses a well-documented, systematic process to develop monitor, evaluate and revise the substance and delivery of the curricula of degree programs and to assess the impact of the curricula on learning" (AACSB, 2007; p. 3). The process should incorporate all aspects of development and span from program and course development through the ongoing process of continuous improvement and evaluation.

The first step in the AACSB Assurance of Learning process is the development of learning goals (AACSB, 2007). The interpretation indicates that, although "faculty should lead the development of learning goals and subsequent learning objectives, … the standards call for input from a variety of stakeholders including alumni, students, and employers" (AACSB, 2007; p. 6). The interpretation of the AACSB standards goes on to provide examples of learning goals and corresponding initiatives including the following example (p. 7):

**Learning Goal:** Our graduates will demonstrate problem solving skills, supported by appropriate analytical and quantitative techniques.
**Corresponding Objective:**
- In a case setting, students will use appropriate analytical techniques to identify a business problem, generate and compare alternatives, and develop a solution.
- In a case setting, students will recognize and analyze ethical problems, choose, and defend a solution.

Thus, with these considerations in mind, as faculty initiate a formal process from goal setting to evaluation, application of existing models may prove beneficial to the process. In the next section, the author describes two cognitive learning taxonomies that were used to develop undergraduate and graduate level projects on collaborative technologies. The assigned projects and their implementation are described in sections 4 and 5. Section 6 describes the survey results.

## 3. COGNITIVE TAXONOMIES

Most faculty probably do not have the time to meticulously walk through the process of examining each exercise and assignment to determine whether or not each fully meets learning taxonomy specifications. However, many probably develop their exercises and assignments with learning objectives in mind that closely mirror accepted learning models. With the increasing emphasis on compliance with assurance of learning goals, faculty may need to find proven learning models to assist them in the development process.

In developing this study, two learning taxonomies were used to evaluate the project: a localized learning model and an established model. The first model used came from the general studies learning objectives of the author's institution. The second model that was used in the study was developed by Anderson and Krathwohl (2001), a continuation of Bloom's taxonomy (1956).

### University Studies Learning Objectives

The project was developed in accordance with the learning objectives of the University Studies Program at the author's institution. With the

increased emphasis in assurance of learning at AACSB accredited business colleges, it is important to consider how well classroom projects meet the learning goals set forth by the University. Although the course is part of the core business curriculum, the general learning requirements of the University Studies program provide a good general outline of quality learning objectives. The fundamental purpose of courses fulfilling the University's general education requirements is to "…equip students to integrate acquired knowledge in order to produce interconnections of thoughts and ideas." The underlying goal of the program is to "…provide students with the information, ideas and skills they need to have in order to live a happier and more intellectually rewarding life" (University Studies Handbook, 2005-2006). Based upon the stated purpose and goals, the University Studies program has developed a series of nine objectives for courses in the program to address. From these courses, students should be able to:

- Demonstrate the ability to locate and gather information;
- Demonstrate capabilities for critical thinking, reasoning and analyzing;
- Demonstrate effective communication skills;
- Demonstrate an understanding of human experiences and the ability to relate them to the present;
- Demonstrate an understanding of various cultures and their interrelationships;
- Demonstrate the ability to integrate the breadth and diversity of knowledge and experience;
- Demonstrate the ability to make informed, intelligent value decisions;
- Demonstrate the ability to make informed, sensitive aesthetic responses;
- Demonstrate the ability to function responsibly in one's natural, social and political environment.

The project focused upon collaborative technologies and was developed with consideration made for the University Studies' learning goals and objectives. Once the project was finalized, several of the learning objectives had been addressed. The learning objectives that this project addressed are described in the following subsections.

**Demonstrate the Ability to Locate and Gather Information**

Both groups of students were briefly introduced to the technologies and then asked to individually view the application tutorial materials provided on the sites. Once students became personally familiar with the collaborative technologies, they could then complete the project. One of the desired results of the exercise was to equip students with another technology tool that they could use to gather data, and then later, further develop into a completed project.

**Demonstrate Capabilities for Critical Thinking, Reasoning and Analyzing**

The project, that students were asked to complete, required them to gather and analyze data and then synthesize the results as a virtual group. The online collaborative resource provided an excellent interface for students to build their project asynchronously.

**Demonstrate Effective Communication Skills**

Students in each class were assigned to groups and asked to complete an assignment as a virtual group. Both the online undergraduates and the graduate classes were asked to keep their face-to-face interactions to a minimum with the majority of their work being conducted online. The goal of learning the new collaborative technology was to enhance the virtual team experience through improved virtual communication and collaboration.

**Demonstrate the Ability to Integrate the Breadth and Diversity of Knowledge and Experience**

The online collaborative technologies had similar interfaces and logic structures as the productivity-based applications with which the students were familiar. Little instructional assistance was provided beyond the application-based online tutorials and answering the few questions raised by the students. Students were able to easily draw from their prior web-based and productivity application experiences to learn and utilize the new technology.

The project was developed with the University Studies learning objectives of the author's institution in mind. To refine the project and examine the learning objectives in light of a more universal model, Anderson and Krathwohl's learning model was applied to the project.

**Anderson and Krathwohl's Learning Model**

The second learning taxonomy used to evaluate the projects was Anderson and Krathwohl's 2001 extension of Benjamin Bloom's (1956) highly referenced learning taxonomy. Bloom's model consisted of cognitive (mental), affective (emotions/ feelings), and psychomotor (physical skills) domains (Bloom, 1956). In revising Bloom's Model, Anderson and Krathwohl noted that, "The revision emphasizes the use of the Taxonomy in planning curriculum, instruction, assessment, and the alignment of these three (2001, p 305). (See Figure 1.) The primary focus of Anderson and Krathwohl's model, compared to the Bloom model, was the shift in focus from assessment to the teaching process. The model was extended, in part, to provide faculty with a tool they could use to help classify and identify project objectives.

Anderson and Krathwohl's Cognitive Process model (2001) extends Bloom's work by re-evaluating the pyramidal progression of learning. Both models classify the learning progress from a state of memorization of facts, to eventual application of concepts in a distinct functional domain.

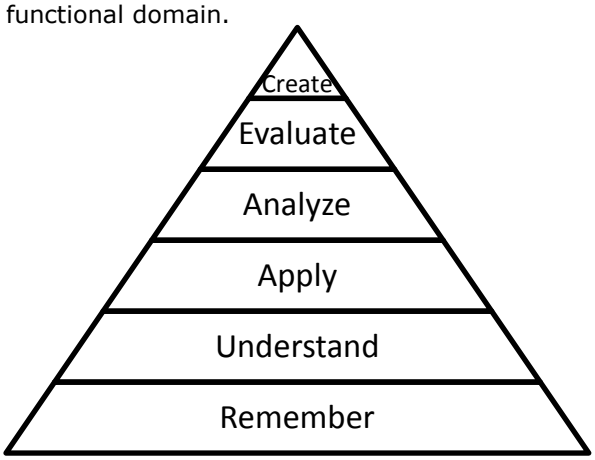


**Figure 1 - Anderson & Krathwohl's Cognitive Model**

As students progress through their academic programs, courses and assignments will likewise progress from activities oriented toward remembering facts and definitions, to application of facts, definitions, and concepts (Figure 1). Essentially, students just starting their programs of study would see more academic work oriented toward the base of the pyramid while students nearing the end of their programs should see projects and assignments oriented toward using their acquired knowledge to create new solutions.

This study was conducted in two business core classes in the College of Business: one at the undergraduate level and the second in the MBA program. Both courses contain elements of all of the steps of the pyramid with short units of study moving quickly from the "Remember" level to "Create." In the graduate level course, greater focus is placed on assignments with characteristics toward the top of the learning pyramid.

## 4.0 PROJECT BACKGROUND

The focus of the learning unit in both the undergraduate and graduate level courses was on virtual teams and collaboration technologies. The undergraduate students were given a project to develop as a virtual group using Google Docs, a free online suite of office productivity tools consisting of word processing, spreadsheet, and presentation applications. The graduate students were given a project to develop as a virtual group using Zoho.com. Zoho is a comprehensive online suite of tools for small business consisting of productivity applications as well as tools directed towards assisting with customer relationship management, accounting information systems, and supply chain management. Although Zoho.com is targeted toward providing a comprehensive business solution for small businesses, most of the applications can be used by individuals for free.

### Subjects

Similar projects, using different collaborative tools, were assigned in the MIS core class at both the undergraduate and graduate levels in the College of Business. Both groups of students were asked to complete a survey following the project; however, the surveys differed slightly based upon the technology covered during the project.

### Junior Level MIS Core

The junior level MIS class is taken by all majors in the College of Business as part of the core curriculum. The prerequisites for this course include an introduction to the Microsoft Office suite course, junior level standing, and concurrent enrollment in a management concepts course. Thus, students enter the course with a general understanding of productivity software and basic business concepts. By the time students are eligible to enroll in this course, they should have taken at least eight courses from the College of Business core curriculum and selected a major field of study. A breakdown of the respondents by major is provided in Table 1. The course was administered online during the Fall 2010 semester. The class contained 27 students with 17 students participating in the survey for a response rate of 62.96%.

**Table 1. Breakdown of Majors**

| Majors | UG # | MBA # |
|---|---|---|
| Accounting | 2 | 8 |
| Administrative Systems Mgt | 1 | NA |
| Business Administration | 2 | NA |
| Entrepreneurship | 0 | 1 |
| Finance | 0 | 3 |
| General | 2 | 7 |
| Health Care Administration | NA | 4 |
| Human Resource Management | 1 | 1 |
| International Business | 2 | 2 |
| Management | 1 | 0 |
| Marketing | 1 | 0 |
| Organizational Administration | 4 | NA |
| Sports Management | 1 | 1 |
| Total number of respondents | 17 | 27 |
| Total number of students in class | 27 | 27 |

In light of the pervasiveness of technology in the current college students' life, it is very possible that students will be introduced to, or familiar with, several technology concepts before entering the course. Thus, the possibility of covering topics addressed in other courses can be of concern.

### Graduate Level MIS Core

The graduate level MIS course is part of the College of Business' MBA core curriculum. In order to enroll in the course, students must have taken the undergraduate junior level MIS course or its equivalent, either as part of their undergraduate curriculum or as a background prerequisite for those not having a College of Business undergraduate major. The course was taught in a face-to-face format with 27 students both taking the course and participating in the survey administered at the end of the project. Table 1 provides a breakdown of the MBA students according to concentration.

## 5. IMPLEMENTATION

Both groups of students participated in a project emphasizing collaboration technologies, followed up by a survey focusing upon their opinions of the technology and its perceived usefulness. The project and survey differed slightly between the graduate and undergraduate courses based upon the technology addressed.

### Online Undergraduate Student Project

The online undergraduate students were provided with a short introduction to Google Docs and divided into instructor-formed teams. The teams were created based upon student location and technical experience. Each team consisted of three group members. Since the class was taught online, at least one student on the team was local. This student could come to the instructor's office on behalf of the team should questions arise during the project. Each team also had at least one student located a distance from campus so that no group contained all distant students. Although not possible for all teams, as many teams as possible contained at least one student who indicated, on a self-evaluation survey, a strong background of computer experience. This student was assigned in hopes of providing a technical lead and could also meet one of the distance characteristics as well.

Groups were assigned a project that they had to complete, by a specified deadline, using all elements of Google Docs. Upon completion of the project, they were asked to share their files with the instructor by the assigned deadline. After the Google Docs portion of the project was completed, the students were then given a short exercise to become familiar with the tools and capabilities of Zoho.com. Again, students were provided with a brief overview of the application and directed to view the online tutorials associated with the tool.

Once the students completed the Zoho.com portion of the project, they were asked to complete a short survey about their experience and opinions about the applications and the value of the exercise.

**Graduate Student Project**

Since several of the graduate students had also completed their undergraduate program at the University, it was assumed that most of the students already had experience with Google Docs. Unlike the undergraduate students whose project centered upon learning Google Docs, graduate students were expected to develop a more in-depth understanding of Zoho.com.

Students were briefly introduced to Google Docs and Zoho.com in class. Google Docs was discussed as an introductory example of collaborative technologies while the focus was placed on Zoho.com. Students received a quick overview of the Zoho.com web site and resources. Students were allowed to form their own teams of three or four students. Due to the large number of applications provided by Zoho.com, teams were asked to select two of the business tools to learn, explain and demonstrate to class at a later date. (This provided the class with a more comprehensive examination of the Zoho.com resources available.) Teams were asked to use the office functions within Zoho.com to perform their collaborative work and develop their presentations.

## 6. FINDINGS

Once the exercises were completed, students in both classes were asked to complete a survey. Survey questions focused on determining whether or not the students had used the technology prior to the assignment, if the project was a valuable use of course time, and whether or not the students could see a use of the technology in the future. Overall, responses for both classes were similar.

**Undergraduate Outcome**

In regards to the exercises' learning objectives, the results of the survey were very informative (Appendices A and B). One of the main learning objectives for the project, from the perspective of the online class, was to "introduce the students to collaborative technologies" and provide the students with a tool that they could use in the remainder of the online course as well as future coursework. The survey indicated that none of the undergraduate students had used Google Docs in any other class and that only a couple had used it for work. The two students who had used the technology for work used either SharePoint or box.net. Thus, in regards to determining whether or not students were already familiar with the technology assigned, the survey indicated that this tool was new to them.

For survey questions asking the students whether or not they thought that Google Docs would be helpful to use in future group projects and if they would use Google Docs on future projects, all respondents indicated that it was useful and would be used in the future. All of the respondents also thought that collaborative technologies, like Google Docs, would be beneficial to businesses.

The third project objective focused upon the value of the project from the perspective of class time appropriation. In examining the responses from the survey, it appears that the project was a valuable use of class time. None of the students had used the software before, so they were provided with a new resource. The students' attitude towards the difficulty of the software changed from approximately 54% thinking that the software was "Difficult" or "Very Difficult" before the exercise, to 94% of the class thinking that the software was "Very Easy" or "Easy" after the exercise.

The undergraduate students were expected to learn Google Docs and then become familiar with the office applications in Zoho.com after learning Google Docs. When asked, "Was it helpful to use Google Docs before using Zoho?" 82% of the students indicated that using Google Docs prior to working with Zoho was helpful. In addition, 88% of the students indicated that the

Google Docs exercise should be assigned prior to the Zoho exercise if the assignment would be assigned again in the future (Appendix B). One of the students, who did not think that Google Docs should be included in the exercise in the future, indicated that since Zoho was more comprehensive, it had everything that was needed for the assignment and more.

**Graduate Outcome**

The graduate students' project required that the students learn and use Zoho.com without an introductory assignment in Google Docs. Similar to the undergraduate assignment, the main learning objectives were met at the graduate level as well. (See Appendices A and C.) As expected when the assignment was created, more graduate students had used collaborative technologies than undergraduate students with approximately 11% of respondents using the resource for work and 22% using a technology in another class. Finance students were the only student major who had used the technology in other classes. For those students who had previously used the technology for work, the collaborative technology used was Google Docs. Only one student felt that collaborative technologies would not be beneficial in future class group projects or for businesses given the state of the economy. Although 98% of the students felt that collaborative technologies could help them in future group projects, only 81% of the respondents indicated that they thought they might use the technology on future projects.

Since the students were not assigned a small project in Google Docs to introduce them to collaborative technologies prior to the Zoho.com assignment, students were asked, "Would it be helpful to use Google Docs or a smaller collaborative tool before using Zoho?" and "Zoho is a more advanced business tool. When the exercise is assigned again, do you think it important to include Google Docs in the assignment?" The responses were similar for both questions with approximately 56% and 52% of the students respectively not feeling that a smaller Google Docs assignment was necessary prior to the assignment of the Zoho.com project. In regards to students' opinions of the difficulty of the software, pre and post improvements were similar to those of the undergraduates; however, the graduate students did not initially view the collaborative software to be as difficult as the undergraduates.

When asked their impressions of the difficulty of the software when the assignment was first started, 52% of the students thought the software was either "Difficult" or "Very Difficult." By the end of the project, 92% of the students thought that the software was either "Very Easy" or "Easy" to use. Their impressions of the office applications' ease of use were higher as 89% thought they were "Very Easy" or "Easy" to use at the beginning of the project with 98% feeling that way by the end of the project. Thus, all three learning objectives for the project were achieved as:

- a majority of the class had never used a collaborative technology prior to this project;
- 92% of the students felt that the technology was easy to use by the end of the project; and,
- 56% of the class did not feel that an introductory project in Google Docs would have been beneficial to the learning process and thus, a valuable use of class time.

As MIS faculty develop and evaluate projects for inclusion in their courses, not only must they consider university and course learning objectives, but they must also consider the relevancy of the material given the advancements in the field. In highly dynamic fields in which the landscape is continuously changing and is heavily integrated with everyday life, faculty may wish to consider surveying their students to determine their level of familiarity with the technology at hand. Based upon their findings, they may wish to adjust the approach that they take on the topic, consider replacing the topic, or depending upon the results of the survey, provide supplemental materials to assist students who are less familiar.

## 7. FUTURE RESEARCH

After examining the results of the surveys for both classes, it seems as if the project provided a beneficial tool for students, was a valuable use of class time, and met the learning objectives proposed for the assignments. Although the project and survey could be administered again to multiple sections, greater value, especially in regards to assurance of learning initiatives, could come from moving on to other

assignments. The learning taxonomies could be applied to the development of the learning objectives of other projects. The simple survey instrument could be modified to collect data regarding students' perceptions of these assignments and determine whether or not their perceptions are in line with those of the instructor. Should the process and survey instrument be used to collect results on future projects, it would be interesting to compare the results of face-to-face and online sections across one course.

## 8. CONCLUSION

When developing exercises to enhance classroom learning, it is important to keep in mind accrediting body considerations, the learning goals and objectives of the university, as well as the goals and objectives of the project. Examining projects during the process of development as well as evaluating the students' opinions of the projects, provides valuable instructional insights as well as possible evidence towards abiding by assurance of learning standards. When technologies that may be addressed in previous coursework are being considered for inclusion in a course, faculty may want to survey students' opinions to determine the value that the exercise provides to the students' overall learning experience.

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**Appendix A**

| Survey Question – Both Undergrad and Grad. | Undergraduate | | Graduate | |
|---|---|---|---|---|
| | Yes | No / NA | Yes | No / NA |
| Before this class, had you used Google Docs, Zoho, or some collaborative technology for **other classes**? | 0 | 17<br>100% | 3<br>11% | 24<br>89% |
| Before this class, had you used Google Docs, Zoho, or some collaborative technology **at work**? | 2<br>12% | 15<br>88% | 6<br>22% | 21<br>78% |
| Did your previous experience help you with this assignment? | 3<br>18% | 11/3<br>82% | 7<br>26% | 18 / 2<br>67% / 7% |
| Do you think **Google Docs/Zoho** or other collaborative technology could help you on future class group projects? | 17<br>100% | 0 | 26<br>98% | 1<br>2% |
| Do you think you will you use **Google Docs/Zoho** or other collaborative technology on future group projects? | 17<br>100% | 0 | 22<br>81% | 5<br>19% |
| Keeping in mind the state of the economy and use of technology, do you think that businesses will increase or decrease their use of collaborative technologies? | 17<br>100% | 0 | 26<br>98% | 1<br>2% |
| Was it helpful to use Google Docs before using Zoho? | 14<br>82% | 3<br>18% | NA | NA |
| Would it be helpful to use Google Docs or a smaller collaborative tool before using Zoho? | NA | NA | 12<br>44% | 15<br>56% |
| Zoho is a more advanced business tool. When the exercise is assigned again, do you think it important to include Google Docs in the assignment? | 15<br>88% | 2<br>12% | 13<br>48% | 14<br>52% |

**Appendix B**

| Survey Questions – Undergraduate Students Only | Very Easy | Easy | Difficult | Very Difficult |
|---|---|---|---|---|
| When you **first started** the exercise, how difficult did you think **Google Docs** was? | 0 | 8<br>47% | 8<br>47% | 1<br>6% |
| By the **end** of the exercise, how difficult did you think **Google Docs** was? | 9<br>53% | 7<br>41% | 1<br>6% | 0 |
| When you **first started** the exercise, how difficult did you think **Zoho** was? | 0 | 6<br>35% | 9<br>53% | 2<br>12% |
| By the **end** of the exercise, how difficult did you think **Zoho** was? | 4<br>24% | 12<br>70% | 1<br>6% | 0 |

**Appendix C**

| Survey Questions – Graduate Students Only | Very Easy | Easy | Difficult | Very Difficult |
|---|---|---|---|---|
| When you **first started** the exercise, how difficult did you think **Zoho** was? | 0 | 13<br>48% | 13<br>48% | 1<br>4% |
| By the **end** of the exercise, how difficult did you think **Zoho** was? | 9<br>33% | 16<br>59% | 2<br>8% | 0 |
| When you **first** used the basic features of Zoho (word processing, spreadsheet, slide show) for this exercise, how difficult did you think the basic features were? | 4<br>15% | 20<br>74% | 3<br>11% | 0 |
| By the **end** of the exercise, how difficult did you think the basic features of **Zoho** (word processing, spreadsheet, slide show) were? | 15<br>56% | 11<br>42% | 1<br>2% | 0 |