

# Education and Project Management: The Introduction to IS course

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## ABSTRACT

The Introductory literacy course has undergone many changes over the last several years. Of course the content has changed over time. However, the delivery of this course is also changing. In this paper we present a delivery method that the author(s) have employed for the last several years which incorporates active learning, experiential learning and team based approaches including virtual teams. However, in today's global society, the incorporation of project management skills and theory has also become a new and critical component of the Information Literacy course.

## INTRODUCTION

In this paper we look at a much needed and new direction for course delivery and content for the INTRODUCTION TO INFORMATION LITERACY course. One of the authors of this paper has delivered an Introduction to Information Literacy course in some form for more than 25 years of his 35 plus years of experience. The second author has had teaching experience for nearly 35 years and her current area of expertise is in Educational Leadership.

One author had extensive experience teaching in the Information Systems area. This author has had students employ experiential learning techniques since about 1974 using punched cards and card readers for analyzing statistical real world data for undergraduates. In 1980, at another university, he taught an Intro to IS course in a computer lab environment using Commodore 8K micros with hands-on experience during class time. The course he is currently teaching is a general education course structured to meet the needs of several majors. These majors are very diverse in nature coming from the School of Technology, School of Education, School of Business, School of Arts and Sciences, et cetera. They all have a need for information systems literacy but their needs are different and yet they may only take one such IS course in their college careers. With this in mind we must focus on delivering a course that might be best for all and I contend it is possible if we also focus on lifelong learning skills as we develop this course.

The second author's doctoral area is Educational Leadership and she has held many teaching positions. Most recently she travelled to many schools in Indiana, Ohio, and Illinois evaluating student teachers.

Perhaps the most valuable input for this course came via discussion with our MIS Corporate Advisory Board leaders. We have had the benefit of structuring a corporate advisory

board consisting of high level management from a quality set of companies. For example it included the Vice President of Telecommunications from State Farm Insurance, A partner with Andersen Consulting ( now with Deloitte and Touche) , the head of recruiting in all non engineering areas for Caterpillar, the Director of quality control for a local DADC plant, management from EDS, a plant manager from Eli Lilly, et cetera. This distinguished group of individuals emphasized the need for teamwork and project management skills. They provided comments as I had successes and failures in my changing of course content and delivery. The authors of this paper are now quite satisfied as to how it has evolved at this institution.

## COURSE OBJECTIVES AND MEASUREMENT

Unfortunately the college catalog description of our course is quite sketchy. The course we will specifically discuss in this paper is:

**MIS 276 Business Information Processing:** An introduction to management information systems. Furthermore, a foundation in internet literacy for today's business world is included. Students will also gain knowledge of project management techniques and develop communication skills. Students will also gain exposure to emerging technologies.

Before we go into the specific delivery and speak of the successes and pitfalls of our suggested delivery it is best to give the reader a clearer understanding of what it is we hope to accomplish with this course. Many of these skills are skills that we believe should be embedded into a wide variety of educational course offerings. Thus the following is a partial list of some of the objectives we wish to achieve in the Introduction to IS course:

### Objectives:

1. Gain knowledge of basic information literacy fundamentals.
2. Gain knowledge of basic project management skills.
3. Gain experience in working with diverse group members during the process of project management.
4. Be able to plan, monitor, and control the steps in project completion.
5. Experience working on multiple projects with different groups simultaneously.
6. Gain skill in being able to keep up to date in the information systems area.

7. Gain in project leadership skill.
8. Be able to compare various hardware components.
9. Gain an understanding of TQM principles and how they must be considered in the development and decision making in the information systems area.
10. Understand the importance of a “value added” approach as the thrust of Home Page development.
11. Work with others in the community to help determine and serve their information needs. This is done through the developing or maintaining of a Home Page for a local non-profit organization.
12. Gain a better understanding of the importance of an individual’s actions to the outcome of a group activity.

5. Individual testing is downplayed as sharing information and working together to complete a project is stressed rather than competition.
6. Both written and oral presentations of project findings will be required.
7. There may be outside evaluators of projects. For example, in the case of constructing a Home Page for a non-profit organization, the organizations contact person is asked to provide feedback regarding whether they perceived the student group to have presented accurate, relevant, and timely information in the process. Moreover, they are to comment as to whether they felt that the student designers involved them in the process.
8. Selecting an appropriate process for project completion is emphasized.

This course has now been taught in this manner for several years. You may note that at no time is a course objective “to manage one’s student teaching evaluation.” But more on that later. However, I might add that one of the authors received the New York State Chancellor’s Award for Excellence in Teaching award in 1976 and was a past Co-Editor of the Journal of Education for MIS. An emphasis of the authors has been quality education. You will see later in this paper examples as to why the gains of this new pedagogy may not always be reflected in questions such as “I really liked the way this course was taught.”

The following is a list of some of the ways to achieve the educational objectives for this course:

1. Students keep a log of current IS related news articles for the semester. This log will also include basic research including new product comparisons such as laptops, printers, et cetera. Students must read and reflect on more than 25 articles from <http://www.cnet.com> in various areas of Information Systems. [13] They must keep current, reflect on how IS developments impact society, and present their results written clearly.
2. Several projects must be completed. Students will work on approximately 6 projects. Each project group will consist of different group members. Thus if there are 6 projects with 3 member groups, each student will have the opportunity to work with 12 different members of the class. This gives the student the opportunity to work with diverse team members. [2], [5], [8], [9]
3. Students learn that rather than ranking peers that the team as a whole either succeeds or fails. However, students may dismiss a group member for failure to cooperate. In this case a project is scaled down to account for fewer group members. This actual experience of taking on a leadership role and working with others is a way to achieve an educational objective.
4. Projects may be submitted multiple times prior to the actual due date in order to obtain formal feedback from the instructor regarding whether project completion appears to be headed for completion in a satisfactory manner. This

### SPECIFIC EXAMPLES OF COURSE CONTENT AND DELIVERY

During this current semester students are to complete 6 projects. They have been allowed the following number of days for completion: Project 1 = 19 days, Project 2 = 26 days, Project 3 = 21 days, Project 4 = 26 days, Project 5 = 21 days, Project 6 = 45 days. These projects are completed over a 14 week semester. Thus projects overlap. Although the projects are not extremely complex, much planning has to be done by the group for coordination. The first project is given out the very first day of class along with group assignments. Groups are initially made up to be as diverse as possible with regard to major and credit hour completion. In this General Education course a group might a senior male Construction Technology major, a sophomore female Criminology major, and a freshman male Sports Management major.

In one of the sections of this course there were several athletes: 2 from the women’s basketball team, 1 from the men’s basketball team, 5 from the football team, and 2 from the track team. There are 38 students in this class. These athletes are grouped with many non athletes. There are also many in class who work at least 20 hours a week. These students need to plan well to complete projects. As stated earlier, no late projects are ever accepted under any condition. However, detailed feedback will be provided on all projects if requested 48 hours or more prior to the final due date. Students are encouraged to complete projects prior to the actual due date. Projects may be handed in as final at any time prior to the due date.

An initial project deals with internet literacy regarding search engines. At this time all students are assumed to have had some exposure to the Internet and have used a search engine. The stress of this project is to give them material and guidelines with which to compare search engines. They compare the advanced searching abilities and also learn of the degree of overlap when comparing various search engines. They utilize basic word processing skills and spreadsheet skills as they write a joint paper (typically with 3 member groups). They complete a study on a topic given by the instructor but are also to look at the commonality of sources found by presenting a spreadsheet of “hits” and search engines. Teams select their own facilitator and must also present times the material was proofread by the various team members. Material on team building is presented in class. One wonderful source we have used in the past is “Exploring Requirements: Quality Before Design.” [11]

In an attempt to maximize diversity we mix strong and weak backgrounds, mix sexes, mix nationalities, et cetera. While the first project is in progress, students are placed on a second team where they will compare internet service providers (ISPs). In class there is discussion on delivery such as DSL, ISDN, wireless, et cetera. They also look at issues such as availability of local access to the provider from various parts of the country, costs of various plans, e-mail addresses and space. Students are then placed in their second group to work on their second project. Class time is liberally used for project work and research. The classes are taught in a lab environment. At this time an area with 40 PCs and 2 overhead projects and a smartboard is used.

TQM is also related to IS literacy. [11]. For the third project students are given material on quality and in particular Deming's 14 points are discussed with examples in the IS area. Students are then placed on their third different team and are asked to go out into the community to discuss these points of quality with some who work in the IS area as well as with others in the community. A secondary benefit of this exercise also lends itself well to a class discussion of employment that is possible in the IS/IT area.

A fourth project introduces students to Open Source programs. The Open source initiative is discussed in detail. Students must download a version of Openoffice.org to their flash drives using portableapps.com. They learn that they are able to carry this software with them and freely are able to use and distribute a word processor, spreadsheet, et cetera that is capable of reading and saving Microsoft Office files as well as reading and saving in various other formats. They then are required to compare the word processing, spreadsheet ability, and presentation software ability with various proprietary software that is available today. Lastly, they must all download other types of Open Source software and comment on its usefulness.

The fifth project has taken various forms. Most recently it has dealt with cell phone characteristics, using VOIPs such as Skype, comparing costs and coverage areas, of providers as well as phone characteristics including radiation ratings. [10]

Material on Home Page construction is also presented in the course. The stress is on current, accurate, relevant, and timely information. There are concepts that are emphasized typically in the first chapter of many Intro to IS texts. Students are to construct and/or maintain a Home Page for a local non-profit organization where local is defined as either the locality in which the students lives, the locality in which the university is located, or even the locality in which they once lived.

In the past these Home Pages were placed on a LINUX server. We have used HTML Frontpage and currently use SHAREPOINT DESIGNER. The Home Page project is the last of the 6 projects that is due. It is the only project given where students select their own group members. Typically the best workers select the best workers and the slackers are left with each other. I am careful not to mention ability in the previous sentence. These projects are such that all can get an A grade. It is typically the ability to work well with others and being able to be responsible that students see as the most desirable traits for their team members. The following anecdote may help to demonstrate that.

A player on a women's basketball team who had just transferred to our institution was asked to be on a group for the final project by a student on the men's basketball team. She mentioned to me that he had asked her and her response was "No ... I have been working hard and I want someone who will

also work hard on my group. I do not think you have been working hard on your projects." She also added that he seemed stunned by her response. I give her credit for her maturity.

Some of the outcomes on final team make up have had me smile. A very husky minority football player (who was a preseason all league selection) worked on a final project with a non athletic white female and a non athletic white male. They had the best project in class that semester. I am guessing that they would not have gotten together prior to the start of the semester but they learned how well each other works and that they could form an excellent team.

Since many teams in today's world are virtual teams, we have also provided this project experience for our students. However, virtual team projects need much more planning in order to be successful.[3] Typically the students are placed in groups with a portion of the team being physically present while the other portion is located at another university either in or out of the United States. Teams select from a list of IT related companies and must present one final paper discussing location, products, employment, and some financial data. Their teammates typically have not been either IT or IS students but students in another discipline so as to maximize diversity while giving them a real world issue to study. Because of the logistics involved, these groups are structured by the instructors with one instructor being the "leader" instructor. For example, one such project dealt with students from Indiana State University working with students from Pretoria University in South Africa. The schools were on very different schedules with very different holidays. The lab environment was different and whereas the Indiana State students had about 40 in class, the Pretoria class was much larger and met for lecture and also in smaller groups for labs.

Students learn that in the IS area there are many projects to complete. Time management becomes essential as students are often working on 3 distinct projects with 3 different sets of group members. Project management principles are discussed. Students learn that they cannot afford to carry others who are not capable of really becoming a true responsible team member. They find out that most students are capable of being a quality team member and it does not depend upon how diverse the group is. However, they also learn that there are a few who do not act as good team members and in this course they have the option of removing them from the group. A student removed from a group does not get placed on another group but receives a zero grade for that project. If a student regularly misses class it becomes much more of a concern for the students who are grouped with him or her than the instructor. There are phones in the labs and calls or e-mails may be regularly made in order to contact group members. Intermediate deadlines become very important. Students learn they may be doomed by waiting to the last minute to complete a project. They may wait for another's work and find it unsatisfactory with no time to improve on it for the sake of the project. Many teams request a pre-grade on their work in order to maximize their chance at receiving an A grade.

## SUCCESS WITH REDESIGN

One may wonder if this delivery is just another method of delivery but not necessarily more successful than the traditional lecture and testing method. These authors believe there are many gains by offering this new IS literacy. Students are taught to plan as they complete several project while working on more than one project simultaneously. Students who tended to procrastinate are no longer able to as they are working with others who may have a very different timeline with different

commitments (such as having a full or part time job or being on an athletic team) and a very different set of responsibilities.

Projects such as the Home Page design with non-profit organizations bring up an awareness of the community via their active learning exercise. They learn about the relationship between education and community. By requiring a log to be kept of current IS developments they not only learn to keep current of IS developments but are allowed some flexibility in their choice of readings and thus are more prone to read with enthusiasm as they learn about areas they are most interested in. By working on a virtual team with members from other disciplines from other universities they learn the importance of IS as it is related to other areas.

For example, we often have had an Introduction to IS class work with a Finance class at another university. [5], [6], [7] This particular project fostered complaints primarily from the Finance students at other universities. In this project students compared and discussed basic financial ratios from IT related companies. Student complaints actually served as support for continuing such projects. For example, the Finance students sent e-mailed complaints that they would rather work on a project where they explained very basic financial ratios to other Finance students as opposed to IS students. They were finding it difficult to explain these concepts they learned to others without the same background. And yet, after graduation, they would have to communicate with many about financial data who were not expert in the Finance area. The instructors at both universities found this project to be a gain for both types of students as the IS students learned that there are also financial consideration in the IS industry.

By using multiple projects with multiple groups students learn the importance of quality collaboration. Even students who tend to slack off in projects learn that perhaps they need to contribute more as students select their own group members for the final project. Those who did not contribute learn that they may have developed a reputation in class and that they are not in demand by others. The final proof of that appears with the formation of groups for the final project.

As stated previously, a system is in place for firing group members. Warnings must be given and documentation must be kept. But students learn that they are accountable to others via their actions. They may try to slide along with a C but are working with others who desire an A. The course is structured so that all can get an A. They learn completion of the project is dependent on good work by all. If they slack off their own group members may release them. This does happen! In one section out of 36 students 6 of them received a zero out of 100 in one project. It is rare to have that many receive that grade for a project but it does and did happen. Some just did not care and I am not sure why they enrolled in this course. Remember, if a member is fired from a group the other students are not penalized by being forced to do additional work. The projects are scaled down to accommodate a lesser number on a team.

On a very positive note students learn that everyone has something to contribute and by sharing a workload and communicating they are able to produce a much better product by working as a team than as individuals. By including a project relating quality and IS one fortifies the notion of the importance of TQM concepts in today's world. By students communicating with those in the workforce they are more intoned to the importance of quality as they proceed with other class projects. [11]

Moreover, by utilizing teams and active learning techniques there is no sacrifice by omitting important fundamental literacy

material.[10], [12]. It is just the opposite. More material can be covered and covered in a more relevant way. Students share their knowledge with each other regarding material as they may discuss and compare their own ISPs, their own PCs, their own digital cameras, their own cell phones and cell phone providers, their own printers et cetera.

One consideration one might make prior to deciding to offer a course in this manner is that the evaluation of this course should depend upon output measures. If 10% of a class has been fired from a group or even given severe warnings I assure these students will not give the instructor a 5 on a 5 point scale to a question regarding how much the student enjoyed this course or how well the instructor taught. Standardized teaching evaluation forms are not necessarily a good way to capture the quality of teaching with this type of course delivery.

In the past this author has received a New York State Chancellor's Award for Excellence in Teaching as well as other similar awards. He believes this method of delivery is far superior to his teaching at the time he received these awards. However, it would be hard to demonstrate that this style of teaching is better using student evaluations of teaching alone. The following anecdote may help to demonstrate that statement. In the past a student delivered to the department chairperson. That note, in essence, said the instructor got his pay for nothing and did not really teach her anything. However, she did state that she probably learned more in this course than in any other course she had taken. Furthermore, she said the instructor contributed nothing to her learning. I smiled when I read the note. I believe the course objectives were met extremely well. She received a very high grade in the course. Her group project work was extremely good. She was very frustrated with one project where she had to fire a group member in her role of facilitator. However, she was not spoon fed and only asked to learn a few key concepts in order to pass the course. She was not given an opportunity to take the multiple choice tests that she had been used to taking. I believe she was headed on her way for lifelong learning. She just hated that she did not sit in a class of straight lecturing that she had been used to. So, not all students enjoy this method of delivery even if they do well. Moreover, lazy students cannot hide. They are forced to participate. Some of them learn something about accountability but not all do. On the other hand, corporate advisory board members continue to provide commendations for a project management approach to the delivery of the IS material.

## CONCLUSION

We encourage all to consider offering the delivery of an INTRO to IS and Project Management course. If you are not an IS faculty member, I would encourage you to share your thoughts with IS faculty members. Some IS faculty members may be unaware that some have drastically changed how the introductory course is offered. There would be a time investment for the faculty member to become adept with this new methodology but the quality of education would outweigh the time costs. Perhaps reasonable administrators might be convinced to give faculty a course reduction as they devote time gathering resources and honing skills in order to offer the "Introduction to IS and Project Management: course.

Lastly, as this course relies on active learning techniques rather than lecture based techniques and also may rely on virtual teams it could be offered as a course over the web. In that manner delivery of Information Systems Literacy components would truly be learned in an active fashion. It is somewhat sad that some faculty are only using information technology to

automate their existing delivery techniques rather than using the technology to develop new and better educational methodologies. Perhaps one day there may even be a web clearing house where faculty might plan joint educational experience with students from their institutions with others from across the globe.

These authors are confident that incorporating active learning, project management, teamwork, and experiential learning allows us to glean more benefit from the information technology that is available while providing the education that will help students to become a more valuable asset to the larger community.

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