

Let's Have Fun with That Required Computer Information Systems Introduction Course

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Abstract

In many institutions of higher education, students are required to take an Introduction to Computer Information Systems course. The course can be taught in many different manners. This paper represents an attempt to try to peak the interest of the Non-Computer Information Systems major to the CIS field. Two different ways of teaching the course are documented. One includes the conventional method of using the Computer Information Systems textbook with a lot of memorization of terms and concepts along with canned case studies in spreadsheet and database work. The other method of instruction includes many different exercises that are intended to cover the required topics in a somewhat more unconventional, even fun manner. The playing of computer games is actually encouraged during class time. Although there was no great demand from the students to change their major to Computer Information Systems, it is clear by the results of this research that today's students respond well to creative assignments and exercises. In fact, many of the students in the non-conventional section of the course reported that they felt that they learned more about Computer Information Systems than did the students in the conventionally taught section.

Keywords: Computer literacy, Computer Information Systems Coursework, Student interest

1. INTRODUCTION

Approximately 5,000 undergraduate students are enrolled at a private University in the Pittsburgh Pennsylvania, where all are required to take a computer literacy course taught by the Computer and Information Systems Department. Because technology areas are being increasingly used by organizations to support their work, students will need these skills to compete in the job market. "All individuals in our society must acquire basic computer literacy to function successfully" (Orr 2002). Previous analysis states that literacy skills of the students span three areas, entertainment, communication, and construction. Further, "each is important to consider, in that high levels of use across categories indicate a broad base of technology skills" (Ching, Basham, Jang, 2005).

The required course is often referred to as a computer literacy course. The term "computer literacy" means different things to different people (Masson, McMorrow 2006). The IS2002 model curriculum tried to address what should be taught in such a course (IS2002, Model Curriculum). Should the course be application software such as excel and access? Or, should it be Information Systems concepts? Or should it be both? (Baugh 2007) What do the non-CIS (Computer and Information Systems) majors need to know to be competent? (Lynam 2003) Competency can be defined as "The ability to perform in the workplace" (Goldsworthy 1993). But how competent with technology should the students be?

The topics to be covered in such a course are still open to debate (VanLengen, Haney

2006). What students should have mastered after completing a literacy course will be as different as the many institutions that teach such a course. One thing is certain, this is a course that all students need (Mackin, Johnson, Paranto 2006). But is there a way to make the topics fun while still providing the students the material they need to learn?

This paper does not try to address exactly what should be taught, but rather how to excite the students about Computer Information Systems. Some have taught the course using the student's major as the focus of all assignments. This method has shown some success (Baugh 2007). Perhaps this would lead to the student having an interest in the course material? (Hoffman, Blake, 2003) The content and delivery method of the course should be examined often in order to stay current with changing technology as well as teaching pedagogy (Filsell, Barnes 2002).

Exciting the students to the Computer Information Systems topics also could lure some of these students to the CIS field. Many of the students taking such a course could be freshman and have not decided on a major. The enrollment in CIS programs has fallen of nationally as well as in this particular University (Lomerson, Pollacia 2006). Therefore, anything that can be done to attract students to the major should be explored. It was hoped that an unconventional approach to teaching the introductory literacy course could possibly attract some students to change their major to Computer Information Systems.

2. COURSE STRUCTURE

The course description of the literacy course at this University is as follows:

"Information Systems Applications provides the student with an integrated perspective of technology and information systems used to support the operation of an organization. The course involves both an overview of technological concepts and practice using application software to enhance decision-making. Concepts addressed include: computer hardware and software,

telecommunications and networks, the Internet and intranets, data management, and decision support systems. The student learns to support decision-making necessary to the modern workplace by completing a series of individual and group projects. The projects include case studies requiring the use of spreadsheet and database management software."

This description allows the individual instructor the freedom to present the material to the students using various pedagogies. For this research, two sections of the literacy course were chosen. Each section had an enrollment of approximately 30 students. One section of the course which was taught by a full time Professor used a very conventional approach with the textbook "Technology In Action" by Evans, Martin and Postey. A custom book provided by the publisher Prentice Hall, containing sections on Excel and Access was also used for this section of the course. The students were assigned chapters to read from the Technology book and multiple choice exams were given to test the student's knowledge of the concepts. Spreadsheet and Database cases were also assigned from the custom applications book.

In the other section of the course, a more unconventional approach was used by this author, also a full time Professor at the University. (Full time Professors were chosen for this research, and therefore the unknown competencies of an adjunct instructor were not an issue). The students were given assignments that covered the topics, but they were asked to apply the concepts, and not memorize them.

For example, when teaching what a computer program is and how the computer actually uses a program, the students had some fun playing computer games. First they were asked to download a tic tac toe game and play it. Then they were given a tic tac toe game that the author had written using the Java language. The students were asked to analyze the section of code that did the checking to see if someone had won the game. They were able see and understand the actual boolean comparisons made in the two dimensional tic tac toe array. The

concept of "computer code" was no longer foreign to them. Of course they were not asked to write a program, but they were able to realize that code has to be generated to run game software. They were also given lab time to download games of their choice and play them as well as download software that allowed them to create their own games. The experience of playing games during formal class time was something that none of the students had experienced in any other course they had taken.

When trying to get the concept of bits and bytes across, the students were provided with an ASCII chart and asked to take a recent email from a friend and translate part of it into the series of eight bits for each character. They were then asked to erase only the very first bit of the entire list. The next step was to group the remaining bits into sets of eight and go back to the chart to translate the bits back to letters. It was a real eye opener for the students to have some idea of the complex process of translating and transferring their words from the email on their computer to a friend's email on another computer.

When looking at how organizations use the internet and intranets, one method would be to analyze sites that are out there for content and ease of navigation etc... But the assignment that was given to the unconventional section was for each student to create their own intranet site. The students were able to create a free 30 day intranet at the web office internet site (<http://www.weboffice.com>). The students were asked to come up with any theme they liked for their site. Some chose something related to their major and some chose something they were interested in, such as a rock group. They used a great deal of creativity in setting up their site. The author as well as ten other students from the class were invited to join each intranet site. The students then evaluated each other's site for content and appearance etc...

When studying database concepts, there were several things that were done. The function of one of the databases they created was to catalog the music they download. They were able to understand the relationships between data in various tables thru the connections of the types of

the songs, the singer(s) of the songs and the format of the songs. Another database that they were asked to create was one of their choice. Each student had to come up with a database of anything he liked as long as it contained at least 4 related tables. They had to create all tables, forms, queries and reports for the database. Some students did need a little help in coming up with an idea and the associated table design. But they were very excited and proud of their work once they had completed the user friendly database complete with buttons for all functions.

The instructor of the unconventional section (this author) is a database programmer for various medical Doctors in the region. Therefore, various real world examples were presented to the students. For example, one database that had been used with the Pittsburgh Pirates to track all orthopedic injuries was used in class, with no sensitive data of course. The students were able to enter themselves as a Pirate player and give themselves game stats and injury information. This exercise not only helped them to understand the design of a complex database, but it also showed that work in Computer Information Systems can lead to wonderful experiences, such as trips to Pirate training camp on several occasions.

Bringing real world experiences into the classroom is something that has been proven to be of benefit when teaching any topic (Prabhakar, Suckarieh 2004). One such experience was the analysis this author did for a restaurant owner as to what prices should be charged for drinks in his bar. The students were given the same problem and asked to create a spreadsheet that allowed the owner to calculate what the cost of each drink should be based upon the various possible cost percentages. This included research of a local bar's cost of various liquor and beer as well as the prices charged to the customers. Most of the students were traditional College age and therefore this exercise was relevant and fun for them.

Every Introductory Information Systems textbook has a chapter on peripherals. And often, it can be just one item after another listed with a definition and description of its features. The material presented this way can be awfully boring. And, is it really

necessary for students to memorize all of the available devices? One of the assignments on peripherals the unconventional section of student were given is as follows:

You work for a non-profit company that provides computer equipment for the physically handicapped. Your new client is a 16 year old male who is confined to a wheelchair and has limited use of his hands. He is very interested in sports and follows many of the College teams. You are to recommend exactly what equipment (hardware and software) should be purchased for this client.

You are to provide your recommendation according to the following:

1. What equipment should be purchased and why? You must provide the name of the manufacturer and the price.
2. What software should be purchased and why? Give some examples of how the software could be used by the client.
3. Is there anything else you need to consider?

The students also did a project on cell phones and what computer features are available on various models. Students were given group projects as well, that included the discussion of technology issues such as private information protection on the internet. An in depth look at the implications of student's use of sites such as Facebook and Craig's List was also a part of this course.

3. RESULTS OF THE COURSE DESIGN

The conventional section of the course followed a prescribed outline of the course work as defined in the textbook. All assignments were taken from the book and students were given multiple choice tests from the publisher. The students in the unconventional section were assigned reading from the textbook, but as stated earlier, the assignments were custom written. No exams were given and all grading was calculated according to the quality of their work. Students from both

sections were surveyed at the beginning and the end of the course. They were asked about their knowledge of Computer Information Systems in general and spreadsheet and database work specifically. They were also asked about their major and if they had considered changing majors to Computer Information Systems. It was hoped that the more unconventional, relaxed format of the course would attract students to the major. But this was not the case. There were no CIS majors in either section at the beginning of the course and only one of the students reported that he was changing his major to Computer Information Systems at the completion of the course. That student was in the conventional section. But the survey did produce some unexpected results. Some of the survey results are provided in Table 1. In the Appendix. The average response is listed with the students reporting their knowledge level on a scale of one to five with one being the lowest and five being the highest.

Students in both sections of the course are from the same general pool of students, so it is unclear as to why the conventional section of students rated their pre-class computer knowledge as being slightly lower than those in the unconventional section. Students reported that they felt more knowledgeable about both computers and information systems in the unconventional course at the end of the semester. This is interesting in that the students were not asked to memorize terms, but to apply the concepts to things that were relevant to their daily lives.

Another interesting result is how challenging the students felt the course was. Figure 1. in the Appendix summarizes the results. No students in either section reported that the course was "Very Challenging". Seventy four percent of the unconventional section of students felt that the course was somewhat challenging as opposed to 38% of the students in the conventional section. The students in the conventional section were required to read each chapter and they were then given very long multiple choice exams. The excel and access assignments came directly from the application book. The structure of the two sections was very different and the author did feel that because no formal exams were given, there

was less pressure on the unconventional section. There was some concern by the author that the students would not feel that they were challenged in the unconventional section of the course. But the results of this survey question show clearly that this was not the case. Students need to be challenged. Research has shown that this can be an essential part of the learning process (Martin, Hands, Lancaster, Trytten, Murphy 2008).

Figure 2. in the Appendix is the summary of the amount of time that the students reported spending on the course. Seven percent of the students in the unconventional section reported that they spent a minimal amount of time as opposed to the 52% of the students in the conventional section. The author was concerned that because formal exams were missing from the course, the students might not take the course as seriously as they would if exams were given. But as the results show, they reported that they did spend the necessary time on the course. Perhaps this is because they were more interested in the course content? (Hoffman, Blake 2003)

Figure 3. in the Appendix summarizes the responses the students had to how they enjoyed the course. The unconventional students reported a higher enjoyment level than the conventional section. Although this is not a critical element of the analysis of the course structure, it makes the course a bit easier to teach and somewhat rewarding to the author.

The students were asked to indicate what they liked most and least about the course. In the conventional section, the overwhelming response to what they liked best was the instructor. He is a long time, popular faculty member of the Computer and Information Systems Department. Only two students reported any course content as being what they liked best. As for what they liked least, many students reported the tests and power point presentations. Many also stated that they would have liked more hands-on time with the computer applications.

The answers from the students in the unconventional section as to what they liked

most and least about the course were very rewarding. Many said that they enjoyed learning things they would use and were not made to memorize a lot of terms. Many also reported specific concepts they liked best, such as what zero and one's actually "do" in the computer and the Access projects. They also reported that they liked the learning environment with a lot of hands on work during class time. Surprisingly the negative comment received from a number of students was that the class was not long enough. The answer many gave to the question as to what they liked least was "nothing".

4. CONCLUSION

Teaching a low level computer literacy course can be a challenging task. Often when a faculty member has been teaching in the Computer Information Systems area for many years, it is easy to become very bored with a very low level introductory course such as the one described in this paper. Some dread the possible assignment of such a course. But, as can be seen by these examples, it is easy to make the course fun and relevant to the student's daily life. And why shouldn't it be "fun" for the instructor as well? Instead of "canned" cases that are provided with all Intro books, the course can be made interesting by just using a little creativity in the choice of assignments. Time spent on the course that is meaningful to the student will give the student a greater appreciation for the topics covered (Hoffman, Blake 2003). It was very rewarding to the author to teach the course in this manner.

Overall, this approach worked quite well. The students were happy to apply the technology to what interested them. One of the drawbacks to this approach is that it limits the topics that can be covered. There just was not enough time to cover all of the IS concepts and the application software. But this often is a problem even if the course is not taught in this manner.

But, it is clear by these findings that there is always room to improve what is being done in classroom. Further study should be done in the area of assurance of learning between two group of such students.

Having non-CIS majors more interested and involved with the course work in a computer literacy course is a worthy goal. Also, since the nation wide enrollment in the Information Systems programs has declined, this course could be used as an advertisement for the major. Even though only one student changed his major as a result of taking this course, 83% of the students in the unconventional section reported that they really enjoyed taking the course as opposed to the 50% who reported enjoying the traditional approach to the course. As the course evolves, more and more "fun" assignments could be created to keep the interest of both the instructors and students alike.

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5. Appendix

Question	Conventional Course	Unconventional Course
Knowledge of computers before taking the course	3.0	3.4
Knowledge of computers after taking the course	3.2	3.8
Knowledge of Information Systems before taking the course	2.0	2.4
Knowledge of Information Systems after taking the course	2.6	3.4

Table 1. Student self reported knowledge

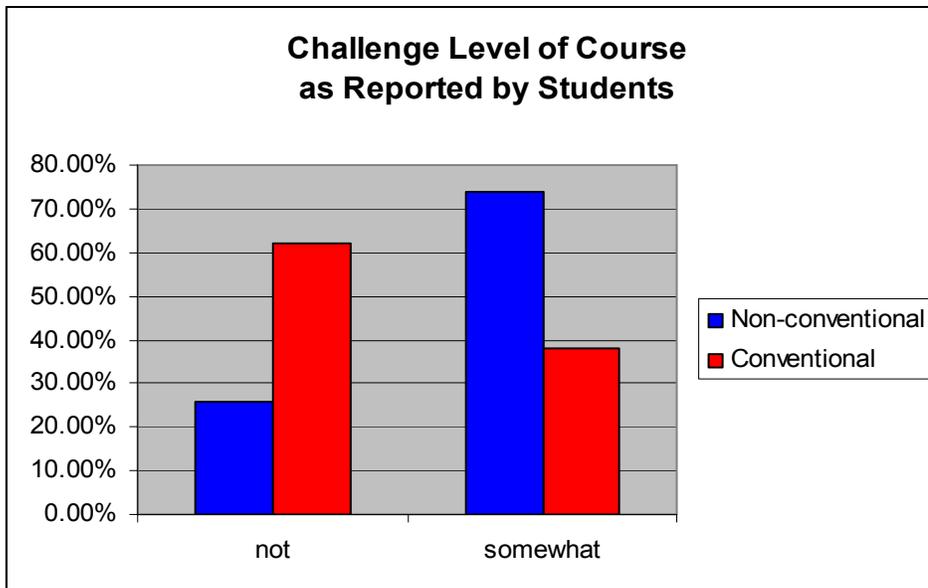


Figure 1 . Challenge level of course as reported by students

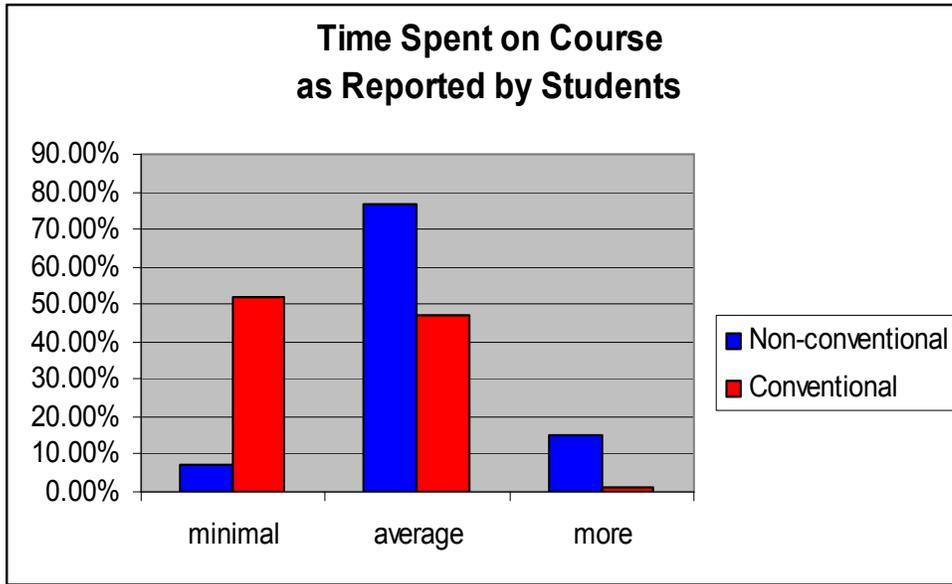


Figure 2 . Time spent on course as reported by students

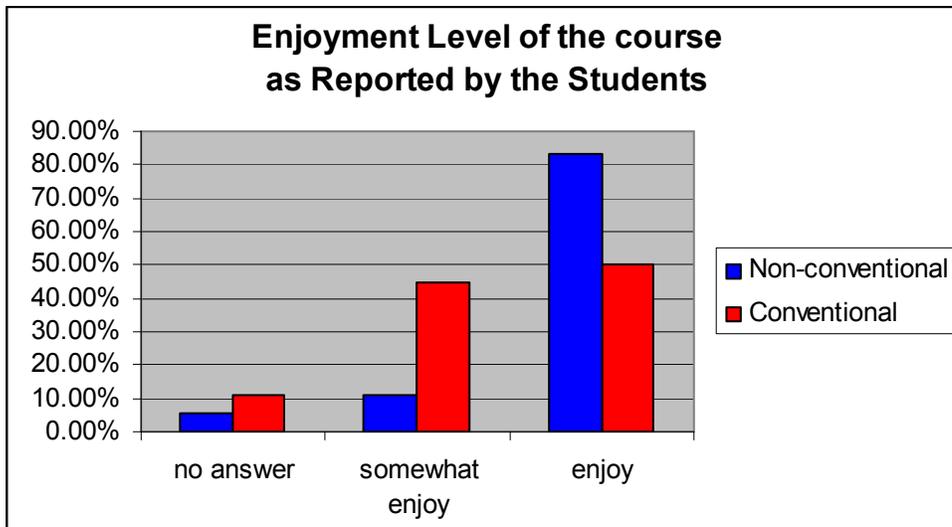


Figure 3. Enjoyment level of the course as reported by the students