Repositioning an Introductory Computer Course for Relevance in the Age of IT Overload

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Abstract

An important element of the core curriculum at the University of Dubuque is an introductory computer course required for all non-Computer Information Systems majors that seeks to impart computer literacy. This course, CIS 101 Intro to Computers, has traditionally focused on specific computer environments and software products. In particular, the course has featured Microsoft Windows XP and Microsoft Office 2007 programs.

Over time, as incoming freshmen students have become more and more exposed to these programs in a high school setting, a resistance had developed where some students object to being required to complete this course.

This paper describes an approach to address students' concerns while also making the course more relevant to their needs by introducing additional units dealing with today's technological concerns such issues as E-safety, identity theft and E-waste.

INTRODUCTION

Today's college students must be prepared for a society and workforce that is increasingly becoming more reliant on computer technology for communicating and conducting business. Many institutions of higher education have identified computer literacy as an essential learning outcome for students. Attaining this outcome can be a challenge for several reasons. One, students enter college at different levels of proficiency in their computer skills. Second, the very nature of technology is that it changes and therefore curriculum content needs constant refreshing. And third, there is no clear consensus among educators as to what the essential learning outcomes of an introductory computer literacy course should be.

For over the past ten years at the University of Dubuque an introductory computer course has been a general education requirement of all students. One course, CIS 101 Intro to Computers, has traditionally focused on teaching students the fundamentals of using Microsoft Windows and Microsoft Office programs. However, over time, as incoming freshmen students have become more and more exposed to these programs in a high school setting, a resistance has developed where some students object to being required to complete this course. Some students requested to 'test out' of the course, a process that was stopped several years ago because of administrative issues. Furthermore, the faculty have questioned if teaching a specific vendors' products is meeting the outcomes of a computer literacy course or propagandizing the leading vendor. We question whether or not Microsoft and higher education textbook publishers are dictating what the student learning outcomes of a computer literacy course should be. When we began peeling back the layers as to what we believe students need to know in a computer literacy course and what our institution mission calls us to do, we discovered a different set of learning outcomes that had little to do with Microsoft products. This past fall we re-focused the content of the introductory computer course to make it more relevant to the information technology environment and issues that students live in today.

Indentifying Relevant Student Learning Outcomes

There were ten student learning outcomes that faculty identified as essential computer literacy competencies. Some of these were carry-over from the original course, while others were new. The ten included:

1. Identify key components of a computer system.
2. Operate a computer and other computer-related equipment.
3. Create, manage, store, remove, copy, and share electronic files.
4. Communicate effectively through digital media, such as E-mail and discussion forums.
5. Demonstrate basic browser techniques to effectively navigate the Internet for purposes of searching and retrieving.

6. Demonstrate basic understanding of at-risk behaviors associated with social networking sites, cell phones, and other online applications, as well as proper online etiquette.

7. Demonstrate basic understanding of how to care, maintain, improve system performance, and properly dispose of computer systems.

8. Demonstrate proficient skills in Word Processing by designing a brochure, writing an MHLA style report, and creating a resume and cover letter.

9. Demonstrate proficient skills in Spreadsheet applications by creating a worksheet with embedded charts, creating a worksheet containing formulas, functions, and formatting features, as well as creating a worksheet containing What-If analysis.

10. Develop competencies in Presentation software applications by designing and creating a slideshow presentation containing text, graphics, transitions and animation.

In this revamped course, eight units were identified as essential elements of the course. Additionally, students were to team up and select a current technology (e.g., Bluetooth, viral video, Blu-ray, Kindle, etc.) as their subject for a 5-10 minute presentation to the class. These "technology" presentations would run nearly the length of the semester, as each week one or two teams would present the results of their investigations. An extension of this presentation leads to the capstone assignment for PowerPoint, discussed later in this paper.

The first third of the semester was redirected to include surveys, readings, and videos on a series of topics such as E-safety, cyber bullying, phishing, technology addiction, online sexual predators, identity theft, the care and maintenance of personal computers, as well as E-waste. Rather than conducting lectures, the instructor directs a discussion on the assigned topic. The goal was to instill a protocol where students learned to research the topics, analyze their findings, evaluate the evidence, and draw relevant conclusions.

The remainder of the semester resumed a modified coverage of the Windows operating system and Microsoft Office applications offered in previous semesters of teaching the course.

UNIT Outlines

Unit 1: Social Networking and Cyber-bullying

The purpose of this unit was to have students examine and be accountable for their own online behaviors.

The topic of social networking sites was first introduced to students as a recognition of its popularity and pervasiveness. Students were encouraged to share with the class which social networking sites they belong to and features about the sites they liked. Students were introduced to a video on social networking sites and how they have also been used for detrimental purposes, such as cyber-bullying.

Students discussed how technology has been used to carry out acts of cyber-bullying. An assignment in this unit included a case story on "sexting", where a teen-aged girl sent her boyfriend a nude picture of herself through her cell phone. When the couple broke up, the ex-boyfriend shared the photo with other friends -- the photo became widely distributed throughout her high school. Eventually, the young girl, not being able to cope with the humiliation, committed suicide. Students were assigned to locate similar stories on sexting, whether personal or in the news, to share in a discussion forum format.

View the YouTube video posted at http://www.youtube.com/watch?v=VLTj3WBmY1k that discusses the suicide of Jessica Logan. Jessica (age 18) had texted a nude photo of herself ("sexting") to her then boyfriend. After they broke up ... he shared the private pict with another friend, who shared it with another friend; well you get the picture. Feeling humiliated, Jessica eventually committed suicide.

In this forum discussion share a story you may know of an unintended consequence of using technology, such as cell phone texting, that has caused harm to others. Please be discrete by not including names of victims unless it's public knowledge and germaine to the story.

If you don't have a personal story, search the Internet, newspapers, or journals, for a story to share. Be sure to cite your source.

Finally, some people feel teenagers who share picts of a sexual nature through texting should be prosecuted as sexual offenders, and or distributing pornography. What do you think? Offer your opinion about prosecuting people (even teenagers) as sex offenders for engaging in sexting. Include in your response how you arrived at your opinion, this could be done by citing evidence (e.g., court case, expert opinion, etc.).

To get started: select the "Add a new question" button below. Enter an appropriate title for your story in the "subject" line.

Figure 1:. Discussion forum assignment on sexting

In addition to students using social networking sites to exclude or include others, discussions about being accountable for our own actions was explored. For example, students were instructed to locate an article on how law enforcement or employers have used social networking sites to make judgments about criminal activity or employability; and to share their findings in a discussion forum

There are many examples of dangers of social networking and cyber-bullying than can be used for this unit. For example, the "Star Wars Kid" was the most popular viral video of all-time that poked fun of an adolescent who innocently pretended to use his golf ball retriever as a lightsaber (Reeves, 2009). Several derivatives of the video appeared when those who found humor in the piece started adding special effects, sound, and characters (e.g., Darth Vader) to the clip. According to the Viral Factory there was an estimated 900 million viewings of the video (MSNBC, 2006). Ghyslain Raza, the young boy in the video, sued his tormentors; but because of the Internet, he will forever be known as the Star Wars Kid. Similarly, a cell phone captured a photo of a Korean girl who shamefully did not clean up after her dog defecated on a subway train (Krim, 2005). Through the power of the Internet, the incident made national news and soon bloggers relentlessly poked fun of the woman's rude behavior. The woman eventually quits her job at her university. Without the aid of technology, the woman most likely would have only endured the dirty looks of strangers on the train. But, because of technology, she will forever be remembered as the "Dog Poop Girl". In both of these examples students can discuss the widespread distributive capabilities of the Internet and its potential for abuse and invasion of privacy.

Unit 2: E-Safety

This unit is an extension of the first, but more emphasis is placed on tips for protecting oneself from online abuses, such as sexual predators, phishing scams, and identity theft. Students are assigned several readings and shown videos obtained from YouTube and i-Safe about how chat rooms are used as launch pads for pedophiles trolling for sex with children. Students were asked to explore ways in which families can educate and protect their members from "stranger danger".

Additionally, an on-demand video (Sc@mmed: Online Identity Theft – by Film's On Demand) was leased and used to spearhead the discussion on identity theft. The film is made available to students through a link to the vendor accessible from the learning management system (Moodle). The viewing of the video was followed up with an in-class group assignment where students were asked to identify suspicious elements of real-life emails.

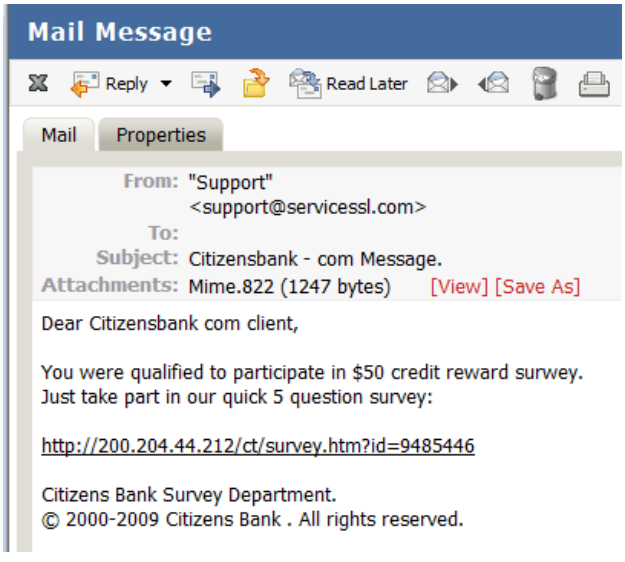

Figure 2:. Students are asked to identify suspicious elements of the email

Issues of personal E-safety were explored as well; as students were challenged as to the nature of the information they share when using sites like Craig's List or MySpace. For example, some people are known to use sexually provocative screen names, include home addresses, telephone contact numbers, and upload compromising photos of themselves to their walls. Others agree to meet up with perfect strangers to sell articles, rent apartments, or engage in the exchange of personal services. As an in-class group activity, students were given mocked-up screen shots of "online" profiles and asked to identify the at-risk behaviors.

Unit 3: Computer Essentials, Consumerism and Addiction

This unit covered three inter-related topics. Computer essentials was first introduced by showing another On Demand video (Lifting the Lid: How Computers Work) to demonstrate the six basic components of a computer system: input, output, memory, storage, processing, and communication devices. This particular topic is always a challenge in terms of holding student interest. Our goal, therefore, was to approach the discussion on hardware by making it fun and relevant. So, in addition to the On Demand video, we created our own home grown video by taking a camcorder and going around campus asking students what they thought was most important to them in buying a computer. For example, students were asked if they prefer a laptop or a desktop computer, and why. They were also quizzed on their knowledge of acronyms, such as RAM and PC. Armed with these foundational pieces, our CIS 101 students were assigned to identify their ideal computer system. Students were to include features of their ideal computer that addressed each of the six basic computer components.

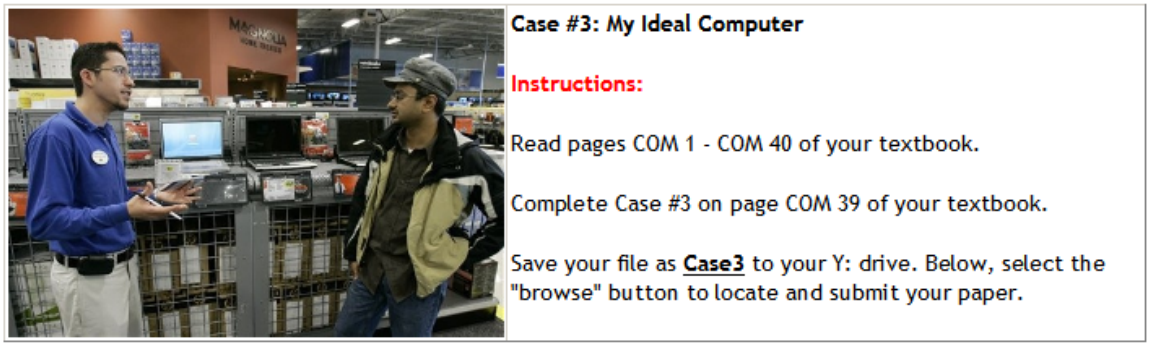

Figure 3: Assignment on identifying My Ideal Computer

This topic also covered technology addiction, what it was and whether or not this should be recognized by the American Medical Association as a disease. Recent headlines, such as a local female student killed when she crossed the center line while texting and driving, was discussed. Plus, students were educated on Iowa's new law on hands-free driving. Oprah Winfrey had a broadcast on texting while driving which is now available on her site. This broadcast, although lengthy, contains some excellent and powerful stories of family members affected by the deaths of their loved ones from texting while driving. Perspectives from both victims and those responsible for the devastation are addressed.

Students were assigned to follow-up on the class discussions and report on others stories through discussion forum postings. Additionally, students were given a technology challenge where they were asked not to carry their cell phones on their person to any of their classes for one week. The assignment called for students to complete a short survey and then to write a reflection paper about their experience. Many students reported they could not last even one day without their cell phone. In future classes, we would like to expand upon cell phone addiction as this is seen as a growing problem in higher education.

Unit 4: Care, Maintenance, and Stewardship

This is another integrated unit where students were introduced to how to care, maintain, troubleshoot, and improve the performance of their computer systems; and when the time comes, how to properly dispose of it. For one day, our system administrator gave faculty additional administrative rights to run application programs such as msconfig and disk defragmentor in order to show students how they can speed up their systems. Students were also shown how to increase harddisk space through deleting temporary files, old downloads, and emptying the recycle bin. Students were then shown how to run disk cleanup. This unit also emphasized the importance of installing anti-virus protection software and lead to a discussion on viruses, worms, and trojans.

The last topic of this unit addressed E-waste. Students were assigned readings and videos on E-waste and then asked to participate in a discussion forum where they discussed the morality of choices the U.S. has made in offloading the disposal of old computer systems to other countries, such as China. Students were also instructed to locate other

alternatives for recycling old technology equipment and the pros and cons of each. For example, is it always a good idea to donate old technology equipment to non-profit organizations? One answer is probably no because you could be saddling the organization with an upkeep cost that they are not in the financial position to handle.

Women in Guiyu, China picking through wires torn out of computers.

"The electronic trash that most Americans deposit at centers for recycling toxic materials often ends up polluting a town in China. In Guiyu, China's southeastern Guandong province, where thousands of tons of old motherboards, printers, and monitors from the U.S. end up each year. China has become the favored destination for the world's discarded computers and peripherals and the main source of used computer parts. According to James Puckett, coordinator of the Basel Action Network, an environmental watchdog group in Seattle, the residues such as lead, mercury, and other toxic materials all end up in China. This article shows how China and other developing countries benefit from electronic trash coming from the U.S. " (abstract from "A Chinese Town's Get-Rich Scheme: E-trash to Cash" IEEE Spectrum; Aug2004, Vol. 41 Issue 8, p13-16).

View videoclip (2:52 min) on the condition of Guiyu, China.

Instructions: Read the article on "A Chinese Town's Get-Rich Scheme: E-trash to Cash". Plus, view the videoclip on Guiyu, China (provided above). Start a new question below and contribute a response to the following questions:

Since the Guiyu's receive compensation for the E-trash of the world, do you feel the United States has a moral and/or legal responsibility for safeguarding the disposal of their electronic equipment to communities such as Guiyu? Explain why/why not.

What, if anything, should the U.S. do to assist Guiyu (or any other country) who is paid for the disposal of E-waste?

** Provide at least one credible source (other than the one's provided in this assignment) to help support your position.

Figure 4:. Assignment on E-waste

Unit 5: Windows XP (or Vista) and the 2007 Office Interface

This unit is similar to one used under the prior course format. The screen elements of Microsoft Windows XP, such as the task bar, start menu, etc. were discussed. This unit also covered the Office 2007 interface, such as the Office Button, Quick Access Toolbar, Ribbon, Ribbon Tabs, Ribbon Groups, Ribbon Commands, Gallery, and more. The content to support this unit came directly from the textbook as well as some videos that were located on the Internet. The textbook we selected is from Cengage, called Microsoft Office 2007: Introductory Concepts and Techniques/ Windows XP Edition, by Shelly, Cashman, and Vermaat. Ancillary resources for the textbook included downloadable files (e.g., images for PowerPoint assignments), and a website that contained practice exams.

Unit 6: Word Processing (Word)

Students are taken through three application lessons while learning various features of Microsoft Word 2007. These application lessons included the creation of a flyer, a report (using MLA), and creating a cover letter and resume from templates. The content and lessons to support this unit came directly from the textbook. The students were also required to complete a capstone project that incorporated many of the features introduced in these lessons. The capstone assignment required students to research a newsworthy event that took place during the month and year they were born (e.g., July 1991) by looking through newspapers, magazines, searching the Web, and/or interviewing family and friends. Students were to write a short research paper (450-500 words) that summarized their findings. The capstone was designed to increase unique ideas and approaches for addressing the assignment requirements. The capstone was designed purposefully to decrease chances of plagiarism. All other assignments from the textbook make it easy for students to share their work, so it was important that we can directly assess student learning outcomes for word processing. Finally, prior to taking the unit exam, students were to complete practice test from Cengage until they achieved 90% (or better).

Unit 7: Spreadsheets (Excel)

Students were taken through three application lessons while learning various features of Microsoft Excel 2007. These application lessons included the creation of a worksheet with embedded charts, creating a worksheet using formulas and functions, and creating a worksheet using What-If analysis. The content and lessons to support this topic came directly from the textbook. The students were also required to complete a capstone project that incorporated many of the features introduced in these lessons. For the capstone project, students had a choice of completing one of two case scenarios from their textbook. The second case was more difficult and students could gain 10 extra credit points if they choose this case. In the future, we hope to improve upon this assignment in order to reduce the possibility that students could share their results.

Unit 8: Presentation software (PowerPoint)

Students were taken through two application lessons while learning various features of Microsoft PowerPoint 2007. These application lessons included the creation and editing of a simple presentation using text and graphics, and a second presentation incorporating slide transitions, animation, and layout options. The content and lessons to support this topic came directly from the textbook. The students were also required to complete a capstone project that incorporated many of the features introduced in these lessons. For the capstone project, students took their team presentation and fixed it so that it came into compliance with the requirements of the capstone (e.g., added slide transitions, applied custom animation, etc.). Allowing students to take an existing file and improve upon its presentation provided some unintentional outcomes. For one, this was nearing the end of

the term and having a project that was already in draft format made student workload easier. Second, many students felt that not much was required of this assignment, other than put it in compliant format, therefore, they took the time to really improve on the overall design. One important point to make is the importance of good feedback on their original presentation. This feedback was helpful in providing students ideas on how they could improve their work. Consideration for future assessment on this capstone assignment is to evaluate if students incorporated the suggestions into their final assignment (e.g., 6-6 rule, color choices, length of presentation, etc.)

LIMITATIONS

The re-design of the introductory computer course has proven to be exciting, yet challenging. For example, there are limitations when it comes to finding textbooks that stay current with the changes occurring in the industry. Heavy reliance on materials found on the Internet can be risky as these materials can be transient. Additionally, the currency of the content makes it difficult for any publisher to invest heavily in creating such a text. Further, video can be costly to produce and the nature of the content of any video has to be careful that it does not age too quickly. YouTube is a great resource to obtain short vignettes, yet one must be careful of the authority of such sources.

RESULTS AND CONCLUSION

Overall, the course redirection first introduced in the fall of 2009 has produced results consistent with expectations. Across the six sections of the course, average grades increased measurably. Student course evaluations were higher than in previous semesters under the old format. Faculty and course assessment surveys indicate an increase in 'Excellent Course' ratings increased 13%; 'Excellent Instructor' ratings increased by 11%.

Post course assessment by faculty identified further changes that could be made. Once again, faculty prefer to reduce the amount of reliance on Microsoft product content and include more relevant material, such as showing students how to effectively use search engines. For example, students should be able to identify what information is needed and develop the ability to locate, evaluate and use information for writing papers and solving problems. Another suggestion for change is to further expand on some of the new topics, such as maintenance and improving system performance, as there was not enough time to give these the coverage needed.

The University of Dubuque offers a second level introductory computer course called CIS 103 Computer Applications in Business. This course also satisfies the core requirement and is typically taken by Business and Computer Information Systems majors. CIS 103 follows a textbook that covers various lessons on Word, Excel, PowerPoint, and Access. These lessons follow a step-by-step approach in building business applications such as executive summaries and pivot tables. Faculty feel that students needing Microsoft Office training can opt to take the CIS 103 course, while students who wish to focus on essential computer literacy skills that are integrated into issues of safety and stewardship could opt to take the CIS 101 course. Faculty teaching

CIS 101 can teach students how to use Word and PowerPoint through the assignments they are given. For example, instructors can provide guidelines on how to apply MLA or APA format and ask students to comply to these standards as they write their paper on the proper disposal of computer waste. Additionally, when students present on their technology topic, the instructor can provide guidelines on the various features of PowerPoint they should adhere to when creating the presentation. Some faculty teaching the new CIS 101 feel it is not necessary for students to work through textbooks where they are really evaluated on their ability to follow steps, instead their ability to search, evaluate and write about relevant computing issues that we face today.

Future Work

A new unit is being considered for inclusion in CIS 101 in the fall 2010 term. This unit, tentatively called 'Information Literacy', would focus on teaching students to find information from a variety of sources such as library databases and the Internet and to develop the critical thinking skills to determine if the source(s) of the information are credible.

This unit would tie nicely into other units of this class where corroborating sources are used such as the Care, Maintenance, and Stewardship unit. It also provides the skills and practice necessary for successfully completing other academic core requirements at UD such as Research Writing, RES 104.

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