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THE OTHER SIDE OF THE WEB PAGE:
ATTEMPTING TO BE AN ONLINE PROFESSOR

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THE OTHER SIDE OF THE WEBPAGE: ATTEMPTING TO BE AN ONLINE PROFESSOR

By

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ABSTRACT

THE OTHER SIDE OF THE WEBPAGE:
ATTEMPTING TO BE AN ONLINE PROFESSOR

By

Leigh Graves Wolf

I have spent the past two years as a virtual student. As a synthesis of my learning and experience, I have created an online course module in an attempt to answer the questions – *What is life like on the other side of the web page? Can I effectively communicate as an online professor; can I create a course to inspire like the ones that have inspired me?* I chose the International Baccalaureate course "Information Technology in a Global Society" as the testing grounds for my project. The inherent subject matter of this course lends itself to being delivered in an electronic format. Mid-production user testing of the module was performed on high school students and conclusions, recommendations for improvement, and lessons learned are reported.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank Dr. Carrie Heeter for her guidance and support not only during the development of my thesis project, but throughout my entire career as a virtual student. Without you, the DMAT program and the Virtual University, I would not be where I am today. You have inspired and encouraged me to pursue my dreams and continue my academic pursuits. For this I am eternally grateful.

I would like to offer my sincere appreciation and thanks to Dr. Joan Predko and Dr. Punya Mishra, for serving on my committee.

I would also like to thank my husband Scott for his love and support throughout this journey. As a virtual student, I have spent many hours with my eyes and fingers glued to the computer screen, ignoring anything and everything around me. You patiently sacrificed not only our Internet connection, but also our time together during this process. I love you.

Thank you to Ryan Schram and his friends at *thewebsitebuilders.com* for their technical assistance with setting up the phpbb message board.

Finally, I would like to thank the students who tested my website. I am fascinated by your responses and look forward to studying and understanding how technology impacts your learning and culture.

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CHAPTER 1 – INTRODUCTION

For the past few years I have been a teacher by day and a master's student during any other time that fit into my schedule! I have accomplished this task by existing as a virtual student. As a full time teacher and technology coordinator, the option of online coursework was appealing to me for many of the reasons advertised – "instruction without the time and place constraints of traditional university programs, offerings designed to meet your learning needs when and where it is most convenient to you." (*www.vu.msu.edu*) The option of online learning allowed me to achieve my goal of attaining a master's degree without having to worry about driving to classes or taking time off of work (in addition to having a legitimate excuse to spend hours of my life online!)

The first online course that I enrolled in was CS101, C++ programming. The course was delivered via streaming RealVideo lectures and pages of lecture notes. This class was a challenge for several reasons. At that time, the only Internet connection available in my area was via a dial-up 56K modem, not favorable for 45 minute streaming lectures. In addition, I had no prior programming experience. If I had a question during a lecture, I could not raise my hand to ask for immediate clarification, or ask classmates for assistance, I was sitting at my computer at home, alone! After four weeks of frustration, I dropped the course. I did not swear off online learning, I was not knowledgeable or familiar with programming and attributed my frustration with the course to this. Next semester, there was an online course offered in my content area, Digital Telecommunication Networks. This was 'up my alley' and I gave online learning

another shot. This experience was better, and basically what I expected from online learning. I read a textbook, read notes from the professor, took online quizzes, and submitted homework assignments to the professor via e-mail. Periodic feedback on my progress was e-mailed by the teacher and he was available via e-mail if we had questions about the course content. I did well in the course and appreciated the way that it fit into my work schedule.

Next semester there were two online courses offered in the Telecommunication department, Telecommunication Network Management and Multimedia Design Studio. Telecommunication Network Management was taught by the same professor I had for Digital Telecommunication Networks and was delivered in exactly the same format as the previous semester. Once again, I did well, however the experience was a bit lacking, I still felt like I was out on my own little Internet island, corresponding with only the professor. However the concurrent online course I was taking, Multimedia Design Studio, changed my life. This may sound like a cliché over exaggeration, but the course changed the direction of my career ambitions. One of the goals of the course was to learn and use Macromedia Flash. I was extremely interested in learning the software, and thinking back to my bad experience with C++, I was very concerned about how I could learn this software on-line, without classmates or a teacher present. Integrated into the main course page was a live chat module where you could see if anyone was 'in class' or online with you. This immediately made me feel part of something; there were others out there in cyberspace along with me, and I could talk to them! In addition to the live chat module, an integral part of our coursework was using the class message board to respond

and reflect upon readings, post questions to our professor and each other, and sometimes just to post websites that we thought our classmates would find interesting. We each had web pages where we displayed and critiqued each other's work. At the end of the semester, I knew all of my classmates and my professor better than any real time course I have ever taken! The best part of the course, and the 'life changing' elements were the fact that the material I was learning had practical applications in my classroom. I could turn around and teach the design principals and software I was learning to my students and staff. Additionally, the course struck a chord with my learning style; I was engaged, enthused and entranced in the learning environment. I didn't do an assignment, turn it in and get a grade, the assignments stayed with me, had meaning. Subsequent online courses from this professor (i.e. Design Research, Use of Comic Elements in Design, and Design for Online Learning) contributed to my enthusiasm for the online learning environment. This was the kind of teacher I aspired to be, I want to be able to teach this way, this was the medium I wanted to live in and learn more about. With this momentum and enthusiasm, I decided to attempt to create an online course for my DMAT production thesis.

CHAPTER 2
RESEARCH QUESTIONS AND BEST PRACTICE FRAMEWORK

What is life like on the other side of the web page? Can I effectively communicate as an online professor; can I create a course to inspire like the ones that have inspired me? My years on the student side have inspired me to try to answer these questions. Specifically, I want to bring the world of online learning to the high school classroom. Online learning is well publicized at the university level; however its entry into the high school world is less publicized. In searching for guidelines specifically targeted to high school students many sources suggested using commercial software like Blackboard (http://www.blackboard.com/) or WebCT (http://www.webct.com/.) I was frustrated to hear this; my idea of a perfect online classroom is similar to a real life classroom, each one is unique. You can't place curriculum into a 'cookie cutter' like application. The 'cookie cutter' online courses that I took were boring. I was engaged in the online courses that had their own look and feel; the professor's personality was reflected through the web pages. This is something that I wanted to replicate in my module.

BEST PRACTICE FRAMEWORK

The National Education Association (NEA) recently published a *Guide to Online High School Courses* specifically for teachers planning on creating their own online courses. My best practice framework will be a combination of the NEA guidelines and lessons learned from my online coursework experience detailed in Chapter 1. The NEA guide includes checklists for seven aspects of online courses: curriculum, instructional design, teacher quality, student role, assessment, management and support systems and technical

infrastructure. In the development of my module, I chose to focus on the instructional design and student role checklists. (TABLE 2.1)

Student Role • *Students are active participants in a learning community based on student-to-student as well as student-to-teacher discussions* • *Students post questions and respond to the comments and questions of other students on a regular basis* • *Student discussions with classmates are under the guidance of teacher who raise the level and broaden the scope of discussions.* • *Student teacher dialogue is encouraged throughout the course* • *Discussion areas are clearly designed for communications among students, as are sites for private student/teacher interactions*
Instructional Design • *The course fosters the development of "Information Literacy" skills* • *Issues of copyright, intellectual property, online privacy, and protection are addressed* • *Students participate in online group activities* • *The course includes regular, sustained, and guided student-to-student discussion and collaboration* • *Students interact with a variety of media and recourses* • *The course includes resources and links to resources from outside the students' familiar culture and immediate geography* • *The course facilitates learning from multiple viewpoints* • *Students use writing to reflect on readings, projects, labs and other assignments*

TABLE 2.1 – NEA Checklists

I specifically target these guidelines because in my experience as an online learner, these issues were central to my understanding and enjoyment of the course. Also, for my production thesis, I am only creating a small portion of an entire course. If I were to implement a full-scale course, the other guidelines would need to be taken into consideration.

CHAPTER 3 - PROJECT DEVELOPMENT PROCESS

With my questions and best practice framework in mind, I chose to create a pilot module based upon a class I have taught in the past. The course is called Information Technology in a Global Society (ITGS.) ITGS is a part of the International Baccalaureate curriculum. The International Baccalaureate Organization (IBO) is a non-profit educational organization that was founded in 1968. There are 1,293 IB schools worldwide, 406 schools in the United States, and 4 schools in the state of Michigan. (International Baccalaureate Organization, 2003)

> *The International Baccalaureate Organization aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.*
>
> *To this end the IBO works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.*
>
> *These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.*
>
> *-ITGS Programme Guide, 2003*

The IB diploma program is comprised of six subject areas: Language A1, Language B, Individuals and Societies, Experimental Sciences, Mathematics and Arts. A student taking the full diploma program will take a total of 6 IB courses and subsequent exams. Student work is assessed internally and externally. Many courses require that the students create a portfolio of lab work or writing samples. This internal work is assessed by the teacher and then by an external examiner. The external assessment is a final exam, which is assessed by an external examiner. The grades are then combined to provide the student with a final grade between 1 and 7 marks. In addition to their coursework, IB students are required to participate in community service, complete an individual research

project called the Extended Essay, and take a course called Theory of Knowledge, which is an inquiry into the nature of knowledge.

As I mentioned, the IB course that I have taught is called Information Technology in a Global Society:

> *The Diploma Programme information technology in a global society (ITGS) course is the study and evaluation of the impact of information technology on individuals and society. It explores the advantages and disadvantages of the use of digitized information at the local and global level. ITGS provides a framework for the student to make informed judgments and decisions about the use of information technology (IT) within social contexts.*

I am passionate about ITGS. I feel that bringing the discussion about the social and ethical effects of technology on society to the high school population is increasingly essential. With the emergence of peer-to-peer file sharing networks, I find it more and more difficult to talk to my students about ethical and social issues related to technology. In a class discussion last year, I could not get my high school students to see both sides of the music piracy issue. They felt that all music should be free. This is their right to feel this way, but they could not articulate why they felt this way, nor could they see why record companies and artists would be upset over the issue. I also found it difficult to have meaningful face-to-face conversations with students, so we began to experiment by using AOL Instant Messenger for our class discussions. Our online discussions were much more lively and meaningful than those we had face-to-face in class. Students, who normally did not participate in class discussions, were contributing the most. With this in mind, I thought that it would be a perfect fit to bring ITGS online, into the student's world. Maybe, learning in a context they are more familiar with and trust, would allow me to persuade them to see issues in a different way.

Additionally, bringing this course online, with the inherent possibility for international communication and collaboration aligns with the mission of the ITGS and the International Baccalaureate program. Offering the course online could add a deeper level of understanding to the subject. A full-scale online implementation of ITGS would allow students from smaller IB schools to enroll in the course and would also provide a truly international experience to the course as students could collaborate and exchange information with other students all over the world.

I decided to focus my pilot module on section 2.3.2 of the required course syllabus titled *Personal and Public Communications*. I chose this section in particular because it brings up the issue of cell phones, which are a part of almost every high school student's daily life; it is something relevant to them. It also addresses issues of online communication and access to online communication across the globe, which I feel is important issue for students to reflect upon. I felt that these two issues would create a manageable and captivating lesson. In the following table you will find the required topics in this section of the syllabus and a chart indicating which syllabus points my module will address.

Social and Ethical Issues	Addressed Specifically in the Module
the psychological consequences of people being in permanent contact	●
ethical considerations of control as the result of using communications technologies	✓
social impact on health of the use of mobile devices	●
effect on personal productivity of personal communications devices	●
effect on the environment of personal communications devices	●
social effects of telecommuting	●
social effects of the widespread use of teleconferencing and videoconferencing	●
social and environmental impact and ethical considerations of telecommuting	●
social impact and ethical considerations of: distance learning, digital entertainment, global media and public information systems.	✓
Knowledge of Technology	
key terms—convergence, teleconferencing, videoconferencing, telecommuting, digital television, push–pull technologies	✓
mobile phone and associated services and use	✓
digital entertainment versus live entertainment, contents of digital entertainment, eg violence, pornography and realism	✓
features of telecommuting, eg environmental aspects, flexibility, productivity, business and social relationships	●
face-to-face communications versus communications via technology	✓
minimum requirements to enable realistic teleconferencing and videoconferencing	●
undetected intrusions into IT systems, eg phone tapping,	●
personal mobile devices, eg PDA, laptop	✓
emerging technologies as the result of	✓

convergence of computers and communications technology	
public information systems, eg traffic control, security camera systems, public transfer information systems	●

Table 2.2 – Syllabus Topics Addressed in the Module
Legend - ● = Not addressed ✓ = addressed

The module was created using Macromedia Dreamweaver MX, Flash MX and the open source bulletin board software *phpbb* (www.phpbb.com.) I chose the bulletin board software because I have witnessed many students using bulletin boards to post messages about topics like video games, anime, and TV shows. I decided to create the module using an unobtrusive 'technology' metaphor with the intent that the message would not get lost in the interface and students would not be distracted by unnecessary graphics. There is one reoccurring graphic cartoon character that cues the students to a graded activity. The module consists of five sections: *Objectives, Review, Listen, Interact and Further Investigation*. There are two supplemental pages: *Need Help*, which provides technical support resources for the student and *About the Module*, which explains my qualifications and research interests, introducing the students to me, the teacher.

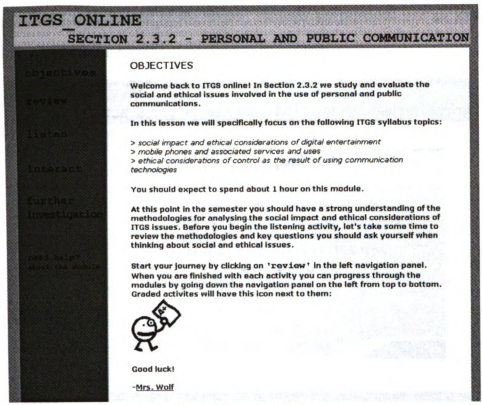


Figure 3.1 – Main Page Screenshot

The *Objectives* section prepares the student for what they will be experiencing in the module and tells them approximately how long they should spend on the lesson. This lesson is not the first lesson in the ITGS course sequence, thus it assumes that the student is enrolled in the course and is coming to this module with prior subject knowledge. Once reading the *Objectives* page, students then move onto the *Review* page, which evaluates the student's understanding of the recommended methodology for analyzing social and ethical issues. The *Review* module was created using Flash MX. The review consists of true/false and multiple-choice questions. If a student provides an incorrect answer during the review, an explanation of the correct answer appears giving the student immediate feedback. If a student selects the correct answer, they are given immediate

positive feedback. At the end of the review, students are provided overall feedback on how well they did on the lesson.

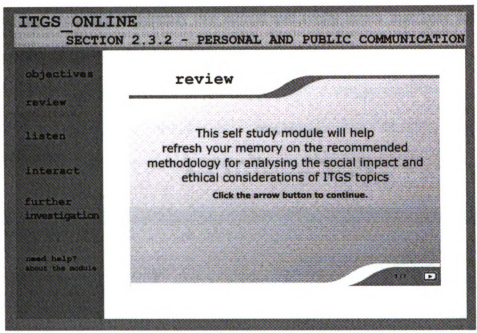


Figure 3.2 – Review Module Screenshot

Once completing the review, students are then asked to move onto the *Listen* page. This section of the course was the foundation of my module. Participants are asked to listen to two stories from National Public Radio and then use the course message board to interact with their classmates and reflect upon the stories. The NPR audio stories are titled "Arab Computer Illiteracy" and "Mobile Phone Ring Tones." I chose these stories for several reasons. First, the use of streaming audio is something the students are familiar with; hopefully, they would think the inclusion of streaming audio is 'cool.' Additionally, these particular stories were selected because they address the ethical and social issues I am trying to highlight in section 2.3.2 of the ITGS syllabus. "Arab Computer Illiteracy" tells the story of young people in Egypt who are struggling to learn basic computer skills. The story is the opposite of what my students, who are of similar

age, are experiencing in the United States. "Mobile Phone Ring Tones" talks about the convergence of pop culture and mobile phone ring tones. After students listen to each narrative, they are asked to identify two ethical and social issues that arise and to post their responses on the class message board.

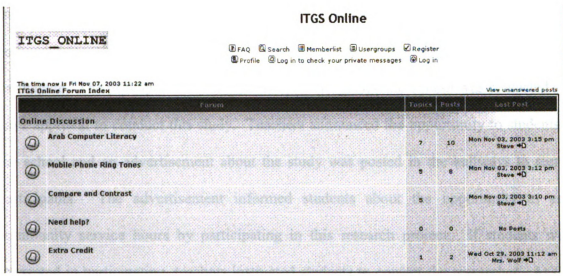


Figure 3.3 – Message Board Screenshot

After students post their own thoughts, they are then asked to move onto the *Interact* page where they review the posts by their virtual classmates. They then must respond to their classmates on the message board. Finally, students move to the *Further Investigations* page where they are provided with additional links to explore and an extra credit opportunity. Students are told that they will be receiving teacher feedback on their postings via the message board and e-mail.

CHAPTER 4 - RESEARCH METHODS

Mid-production user research was conducted on the ITGS Online prototype to assess reactions and to find usability problems encountered by students. The students chosen to participate were from an International Baccalaureate school. The students at the school were representative of those who would take the course if implemented worldwide. Five students were needed to test the prototype of ITGS Online. Students were offered community service hours for participating in the study. Parental consent was required to participate. The principal from the International Baccalaureate School was contacted and gave approval to conduct this study. Teachers announced the opportunity to students at the school and an advertisement about the study was posted in the hallways to recruit participants. The advertisement informed students about the opportunity to earn community service hours by participating in this research project. If students were interested in participating, teachers instructed students to contact the researcher. At that point, I gave students parental consent forms and scheduled lab time to perform the user testing.

RESEARCH PROCEDURE

Students returned the parental consent form and arrived at the research room at their scheduled time. The student's computer was connected to the Internet and logged on to the ITGS online prototype. Students were given an assent form to sign before they began participation in the study. Each student was asked to "think aloud" while they navigated through the module, mentioning any uncertainties about where to click, possible confusion, as well as things they liked. I observed students one at a time interacting with

the website and took notes on problems they encountered. Once each student completed the module, I administered a brief written survey.

Only the primary and secondary investigator (Leigh Graves Wolf and Dr. Carrie Heeter) have access to the data collected. All data will remain in a locked cabinet off school grounds. Student participants were given pseudonyms and their real names will not be associated with the data or online message boards. Results are reported using the given pseudonyms. The student's names will never appear in research results. All data will be destroyed after the research study is complete.

CHAPTER 5 – OBSERVATIONS

Observing students in action is one thing a virtual professor rarely has the opportunity to perform. I wanted to observe students interacting with my module to identify usability issues in addition to getting a feel for their reactions to an online learning environment. Recruiting students was more difficult than I had anticipated. I did not have a large pool of participants to choose from. I had originally intended for my participants to come from the ITGS course offered at the school. However, after numerous recruiting attempts, none of the students in the ITGS course were able to participate in the study due to exam commitments and conflicting after school activities. This was a concern because my module assumed prior subject area knowledge. Fortunately many of the fundamental themes in the IB program (i.e. discussion of ethical and social issues in different contexts) are replicated across courses. There were two responses to my hallway advertisement to students. Other teachers at the school voluntarily offered to help recruit participants by offering their students extra credit in their courses to participate. In the end I was able to acquire four males and one female to test the site. Two students were in 10^{th} grade (male), one student was in 11^{th} grade (male) and two students were in 12^{th} grade (one female and one male.)

All testing was done after school hours in the computer lab. The testing environment was atypical to what a 'normal' virtual student would experience. My classroom environment was my computer room at home, working alone with my husband in the other room or my dog on my lap. The school computer lab was chaotic - very noisy, filled with students running around releasing stress from their long day at school. I was amazed by

the ability of the participants to shut out the room noise and concentrate on the module. This was an encouraging observation if an online class were to be implemented in a similar situation. As I looked around, many of the students in the computer lab seemed to have the ability to tune out the room noise and concentrate on the task at hand, whether it was my module, or homework that they were working on for other courses. Additionally, none of the students who participated in the study were interested in the offered incentive of community service hours; they simply wanted to see what an online course was like. This does not necessarily indicate an unadulterated interest in online learning by all students, but in many of my past experiences with high school students it is rare to find a student who will do 'something for nothing' especially on a Friday after school. The 11th grade student had taken an online course before through the Michigan Virtual University and he wanted to compare this course to the other course he had taken online. Of the remaining participants, none had experienced an online course.

USER INTERACTION OBSERVATIONS

I could immediately tell that all participants were adept users of technology. Having worked with high school students in the past, this is not surprise me. Participants kept multiple windows open and would use ALT + TAB to switch back and forth between pages. All participants used keyboard shortcuts to cut and paste, erase, and to perform other operations on the course message board. This observation increased my confidence about breaking some usability standards such as having multiple browser windows open when clicking on a hyperlink. The average time to complete the entire module was 45 minutes.

During one observation, a student who was not involved in the study saw that my participant was on a message board. He pointed to the emoticons and said, "Hey cool, why aren't you using those." My participant said, "This is for school, you can't use those." I was perplexed by his response. In past classroom experiences, my students have used emoticons (liberally) in presentations and e-mail communication. I specifically chose the *phpbb* bulletin board software in hopes that the students would use familiar and 'cool' features like emoticons. In the end, none of my participants used emoticons. This made me wonder if I had made the interface too 'stiff' or if the student felt pressure to act in a certain way because I was standing behind him and observing his actions.

OBSERVATIONS ON *OBJECTIVES*

None of the participants clicked on the *Need Help* or *About the Module* links. All participants were comfortable with the navigation structure. I found it very interesting that almost all (four) participants highlighted the text or used the mouse to follow the text while they were reading the screen. I wonder if this was because I was observing them or if this was a normal behavior for these participants.

OBSERVATIONS ON *REVIEW*

All participants easily navigated through and completed the 6-question quiz. Student scores ranged from 17% - 100%. The students in 12th grade posted the lowest scores. The students in 10th grade achieved the highest scores. In general, it seemed as if the 12th grade students were not as invested or interested in the experience as the younger students. Some participants expressed signs of disappointment if they chose an incorrect

answer. All students successfully navigated onto the next section without confusion or hesitation.

OBSERVATIONS ON *LISTEN*

This section revealed the critical usability issues. Participants were given an option to click on a link to 'assessment criteria' which revealed a grading rubric for their message board posts. All participants clicked on the assessment criteria. I did not program the window to open to a specific size, so it covered the screen. Some participants resized the window, some minimized the window, and others read the page and then closed the window. Though they were all comfortable with the popup window, it did cause an interruption in the flow of the lesson.

By the expression on their faces, students seemed to enjoy listening to the NPR stories. I had hoped that they would react this way. All students listened to both segments in their entirety. (Arab Computer Illiteracy was 4 minutes and 54 seconds long and Chart-Topping Mobile Phone Ring Tones was 3 minutes and 49 seconds long.) The students seemed to enjoy the mobile phone story; early in the segment there is a piece of rap music that is played, at this point all students smiled and began bouncing their head up and down. I had centered my module around these stories in the hopes that the inclusion of streaming media and popular culture would peak the students interest and attach a 'cool factor' to the module. In my experiences teaching high school students, they are more likely to respond to lessons that integrate or include acknowledgement of their culture. Using examples that incorporate popular culture can lead to a more engaging

discussion and can also get students to 'buy in' to discussions about ethical and social issues.

My directions for the activity (Figure 5.1) were unclear. When participants clicked "class message board" I programmed the link to open in a new window. All students realized this and resized the window on their own; however it did cause another interruption to the flow of the module. Many students did not follow the instructions to type in a specific subject line in their message board response and two of the students got 'lost' in the message board and posted their responses in the incorrect forum.

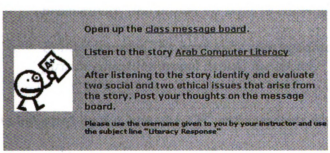


Figure 5.1 – *Listen* Instructions Screenshot

For having no prior subject knowledge, most students gave extremely thoughtful answers. Three of the participants had the grading rubric open and were checking to make sure their answers fit the required criteria. 10th grader "Al" was one of the students who consciously checked the rubric while he was responding to the stories. His response to the Arab Computer Illiteracy piece clearly reflects his attention to detail:

> *The lack of significant economic growth in the Arab world is due largely to the lack of computer literacy. Also, lack of the political equality of women, specifically in the workplace prevents many female arabs to rise in the business world. Conflict and pressure from neighbouring countries adds to the dilemna.*

There is an immense lack of human resources in the IT area subtracts from ability for economic recovery in the Arab world. The poor economic state adds to the inablility to increase computer literacy and improve the political and economic state of arab countries.

Only if entreupeneurship and computer literacy increase, will the situation improve. If loans are given by banks to new businesses, specifically started by women (which will allay the problem of female discrimination in the Arab world). Some aid will be needed to help stop the problem of computer illiteracy.

Classes provided by charitable organization could help the situation, but attendance would be doubtful. Only if businesses start to blossom can the IT situation in Arab countries be helped.

On the other hand 12th grader "Anya", did not have the rubric open:

Social issue= technology is not advanced in the country. It's important that that it is though, because an advnaced knowledge in computers technology increases productivity, and allows for them to catch up in these areas.

Ethical Issue= Girls need to be seen equal to boys, and a greater participation of girls in education would benefit the society

As indicated by the quiz, the 12th grade students who did poorly on the quiz, posted poor, non-meticulous answers. The 10th grade students who performed well on the quiz posted answers that were well thought out and congruent with the grading criteria. Postings ranged from 61 –308 words. Once again, students who performed poorly on the review module posted shorter answers. As I observed earlier in the module, the 12th grade students did not seem as interested or concerned with their performance as the 10th and 11th grade students. This could be attributed to 'senioritis' (the lack of motivation in the senior year) or could it be indicative of how they would behave if this were a real course.

OBSERVATIONS ON *INTERACT*

At this point, a few students realized that they had posted their responses in the 'wrong' place. I told them not to worry, the directions were unclear, and to continue through the module. I had pre-posted two responses to the message board so that the students would not enter an empty board, or 'empty class.' As I had hoped, participants did not have difficulty using the technical aspects of the message board to respond to their peers. One student used the 'quote' feature, which allows the user to include and highlight phrases from a bulletin board posting into their own post or reply. This 'advanced' feature was one that I did not explicitly point out to the participants.

OBSERVATIONS ON *FURTHER INVESTIGATIONS*

Only one participant followed the links in this optional section. He followed the link to the course textbook (an off-site resource), read the chapter summary and then took the online chapter quiz for the lesson. He skipped over explanations of cell phone networks. He then clicked on the link to the BrainPOP site and watched the animation on how cell phones work. When I asked why he clicked on those links he said, "I just wanted to know what was there." The other participants did not express interest in the further investigations; however one of the participants visited the class message board five days after we had met to post a response to the extra credit question:

Your instructor violated an ethical principal in the creation of this module!!!! The first person to identify what I did gets 10 points extra credit.

This surprised me because I did not explicitly point out the URL of the site to the participants and I did not see this participant write down the URL. I would hypothesize that these two students have a high level of internal motivation and/or are very interested

in online learning! The two students who followed these links were in the 10th grade, furthering my observations that the younger students were more engaged in the process.

SURVEY RESULTS

In addition to the observational analysis, I wanted to give the participants a survey to get a quick idea of their immediate reactions to the site. The results are not statistically significant, they are meant to guide the designer (me) in further iterations of the module. The survey (see Appendix E) was administered immediately following the interaction with the course module. The survey questions were designed to target specific issues in the NEA guidelines in addition to issues that were important to me as a virtual student. The students were asked to rate the questions on a Likert-type scale of 1 – 5; 1 being very poor or very little and 5 being very good or very much. The participants were aware that I had created the module. This knowledge could have had in influence over their answers and feedback on the module. Participants may have felt pressured to please me or not hurt my feelings if the responded in a certain way. If I had the opportunity to perform the user testing again, I would not indicate that I was the creator of the module. Results of the survey are listed below (Table 5.1.)

Subject Name	Sanjay	Steve	Adam	Al	Anya	
Grade	10	12	11	10	12	
Nationality	Indian	American	American	American	Russian	
Gender	Male	Male	Male	Male	Female	**Average**
The quality of the module content, graphics, and navigation:	5	4	4	5	5	**4.6**
The quality of the streaming sound and video when applicable:	4	5	4	3	4	**4**
The extent to which the instructor encouraged class participation:	4	3	5	5	4	**4.2**

The instructor's communication skills:	5	4	5	5	5	**4.8**
The clarity with which the module goals were communicated:	4	3	5	4	5	**4.2**
The degree to which completing this module online helped you gain a better understanding of the class material:	3	3	5	5	4	**4**
The extent to which you felt you were part of a 'class':	2	1	1	5	3	**2.4**
Opportunity for practicing what was learned was:	3	4	3	3	3	**3.2**
The intellectual challenge presented was:	4	3	3	3	4	**3.4**
The amount of effort you put into this module in comparison to a teacher lead classroom lesson was:	2	2	3	4	4	**3**
The amount of enjoyment participating in this module in comparison to a teacher lead classroom lesson was:	3	2	4	3	3	**3**

TABLE 5.1 – Survey Results

INTERPRETATION OF SURVEY DATA

Three out of the five participants were native to the US. Three out of five students were in the full IB program, while the remaining two were in the 10th grade "pre-IB" courses,

which prepare students for the full IB curriculum. None of the students were enrolled in or have ever taken the ITGS course that is offered at the school.

All questions were rated on a scale from 1 – 5, 1 being very poor or very little and 5 being very good or very much. The highest-ranking results were a 4.6 on the overall quality of the module and a rating of 4.8 for the instructor's communication skills. The question - to what extent did you feel you were part of a 'class' was the lowest rated question with a rating of 2.4. However, if I remove the one extreme rating of a 5, the average drops to 1.75. In addition, the students posted a 3 average when asked how much they enjoyed participating in the module in comparison to enjoying a traditional classroom experience. Students gave the module a 3.4 rating for an intellectual challenge, and a 3.2 rating when asked if they had an opportunity to practice what they had learned.

CHAPTER 6 – CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

Before interpreting the data, I must acknowledge that the results could be distorted for several reasons. The students who participated in my study and took the survey were aware that I was the creator of the module. In responding to my survey, they may have felt obligated to be polite or provide positive feedback on my work because I was in their presence and they did not want to make me feel as if I had done a poor job. In addition, the students may have confused my online presence and my presence in the room. For example, when I asked participants to rate the instructor's communication skills, they may have been responding to my face to face communication skills with them in the lab, rather than to my online communication skills in the module. Additionally, the students did not experience a full online course, their opinions and feelings about online learning could be drastically changed if they had participated in a complete online learning experience.

In analyzing the survey data, I recognize that I did not achieve one of my most important goals for this module; I did not make my students feel as if they were part of a class. Going into the testing, I was more concerned about the usability issues that surfaced in the *Listen* section of the module, however, I was unaware that the entire environment I had created was overly sterile and that students did not feel that they were part of a 'real' class experience. This leads into to my research question – Can I effectively communicate as an online professor; can I create a course to inspire like the ones that have inspired me? One of my participants unknowingly addressed this issue when asked

the survey question – If you were to take this course online for an entire school year, what would be some of your greatest challenges?

> *"Taking the course seriously and taking a class without a teacher. Being on my own without a class or teacher would be the hardest thing."*

This statement speaks volumes to my ability as an online teacher. This participant did not recognize the presence of a teacher in my course module. I did not fully become a part the course; I did not allow myself, or my presence to shine through. It is my belief that the true mark of an excellent teacher (whether virtual or real) is the ability to make your presence known, yet at the same time making that presence seamless. My virtual professors had made their presence seamless. I never felt that they were pushing their presence into the course, they were just...there. So when creating my module, I assumed that because I created the module, my personality would automatically emerge. I did not put conscious effort into creating presence. If I were to embark on a full-scale implementation, the interface must be radically modified to make the students feel as if they were part of a class with a teacher as a guide. One way to achieve this would be to include pictures of myself throughout the lessons and including pictures of the students on the course message board along with personal profiles. A synchronous chat module would also be included so that students who were on the course site at the same time could chat with each other in real time as if they were in a classroom. I would use more a relaxed and conversational tone in my writing and be sure to provide immediate feedback to students so they feel my presence throughout the course.

Another question arose as I was performing the user testing; difficulty finding participants made me wonder how an online course would fit into an International

Baccalaureate high school student's schedule. With a heavy course load, students spend many hours after school on homework, extra curricular activities, family commitments, or working part time jobs. It doesn't seem like the option of taking a course 'on their own time' would work into their schedule. When asked the question "If you were to take this course online for an entire school year, what would be some of your greatest challenges?" one participant confirmed my hypothesis:

"...finding the time to take a class online after school."

A solution to this would be to schedule the course into the student's daytime schedule. The online course would be scheduled just like a real-time course. When performing the user testing, I was amazed by the ability of the participants to shut out the room noise and concentrate on the module. However, I was also amazed at the amount of students in the lab, there were 60 desktops provided for a student population of approximately 520 students. If students were guaranteed use of the computers during a regularly scheduled class time, another characteristic of online learning would change; their virtual classmates would be real classmates sitting next to them in the lab. As an online professor, knowing my students were in the same room together is something I would work into course content, and could use to my advantage, possibly by having students work collaboratively on projects.

I took note of the fact that none of the students who participated in the study were interested in the offered incentive of community service hours; they simply wanted to see what an online course was like. While performing the user testing, all participants were engaged and interested while listening to the audio stories. I think this shows that there is

interest on behalf of students to want to integrate online learning into their schooling. Some of the students expressed concern that they would not be able to stay on task if they were 'on their own' taking this course. I believe the integration of several different forms of online media can keep the students interested and on task. Setting time on task deadlines, and allowing students a choice of tasks and topics as suggested in *Seven Principles of Effective Teaching: A Practical Lens for Evaluating Online Courses* (Graham, Cagiltay, Lim, Craner, & Duffy, 2001) are other recommendations to be incorporated in a full scale implementation. After interacting with students and analyzing the user testing findings, I do believe that with revision, this course could be implemented successfully. The opportunity for students to collaborate on an international level brings a new level of meaning to the course and provides an opportunity for teaching in an enriching multi-layered learning environment.

What is life like on the other side of the web page? It is a lot different than I had anticipated. After reflecting upon the experience, it was very similar to my first day as a classroom teacher. There were a lot of things that I did not expect to encounter; there were disappointments, but there were also glimmers of success. Just as I did not give up after my first online student experience, I will not give up as an online teacher. The lessons learned and experience gained from this project will be something to build upon for my next online teaching adventure. A professor once told me that it takes approximately ten years to achieve an expert level of knowledge in a field. I have a long journey ahead, but it is one I embark upon with a little more experience, a little more insight and a lot of enthusiasm.

APPENDIX A – LETTER TO PRINCIPAL

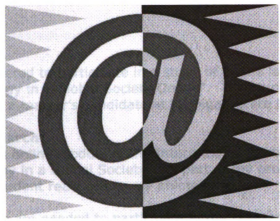
Thank you for agreeing to allow me to work with your students on my master's thesis project. As I mentioned to you in person, my thesis project is a virtual version of the International Baccalaureate course, Information Technology in a Global Society. In order to complete the project, I must observe students interacting with my web site. In the thesis report, aliases will be used when referencing the school and students and all student data gathered will remain confidential. In exchange for participation in the study, students will receive service hours.

Attached you will find the advertisement that I will be sending to the students.

Thanks again for allowing me to work with your students,

Leigh Graves Wolf
Michigan State University Masters Candidate
405 West Grand Traverse
Commerce, MI 48382

APPENDIX B – ADVERTISEMENT TO STUDENTS



CAS Opportunity!!

Five students are needed to test online version of Information Technology in a Global Society. Students will be awarded CAS hours for participating in the study. Parental consent is required to participate.

Please contact Ms. Leigh Graves Wolf (gravesle@msu.edu) for consent forms if you are interested in participating.

APPENDIX C – PARENTAL CONSENT FORM

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY ONLINE
Active Consent form for Parents

Dear Parent:

Your child has volunteered to participate in a study of online learning titled "Information Technology in a Global Society Online". The study is being conducted by Leigh Graves Wolf, a master's candidate at Michigan State University.

Purpose of the Research
My thesis project is an online module of the International Baccalaureate course, Information Technology in a Global Society. As part of my project, I must conduct research to analyze student reactions to my online module.

A total of five students are needed to participate in the research,

Procedures
Participation in the study will take approximately two hours. It will involve two steps:

1. Students will explore and complete an online lesson. I will be observing the student's interactions with the module. They will be asked to "think aloud" about any problems or confusions they encounter with the software.

2. Students will respond to a short written survey with questions about their experience

Foreseeable Risks or Discomforts
This study poses a minimal risk to students. Though I may know the students, I have no impact on their academic grade. Students may feel uncomfortable being observed. I will verbally and in written instructions insure them that they are not being graded on their performance, I am just observing their interactions with the web site.

Benefits
In using the module, a benefit is that students will learn interesting content about information technology in a global society. They may enjoy offering their opinions about a potential online learning module.

Voluntary Participation/Withdrawal
If at any time your child feels uncomfortable, he/she may leave the room and receive full credit for participation.

Confidentiality
Your child's privacy will be protected to the maximum extent allowable by law. Student names will remain confidential and aliases will be used in my notes and on the surveys. Pseudonyms will be used in the published thesis report. Data will be stored in a locked cabinet off campus. Data will be destroyed with the study is completed.

Compensation/Costs
As a reward for participating in the study, students will be compensated with community service hours. If at any time they feel uncomfortable participating, they may leave and receive full credit for participation.

Contact Persons
If you have any questions about this study, please contact the principle investigator:

Professor Carrie Heeter
Department of Telecommunication
Michigan State University
253 Communication Arts and Sciences
East Lansing, MI 48824
(415) 681-6473 (San Francisco contact phone number)
heeter@msu.edu

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Please complete and sign the consent form below to allow your child to participate in the research study. I can be reached at 248.366.6617 or via e-mail gravesle@msu.edu if you have any questions.

Thank you,
Leigh Graves Wolf

I agree to have my child, _____, participate in this study.
I do not agree to have my child, _____ , participate in this study.

Signature _____
Relationship to child_____
Date _____

APPENDIX D – STUDENT ASSENT FORM

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY ONLINE
Assent form for students

Hello. My name is Leigh Graves Wolf and I am a master's candidate at Michigan State University. Thank you for volunteering to participate in my research study titled "Information Technology in a Global Society Online". ! In order to conduct the research, I need your permission to observe your interactions with an online module of Information Technology in a Global Society. I will be observing your interactions with the website and then providing you with a survey to fill out with questions about your to your reactions to the lesson.

If at any time you feel uncomfortable, you may leave the room and receive full participation credit.

Contact Persons
If you have any questions about this study, please contact the principle investigator:

Professor Carrie Heeter
Department of Telecommunication
Michigan State University
253 Communication Arts and Sciences
East Lansing, MI 48824
(415) 681-6473 (San Francisco contact phone number)
heeter@msu.edu

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Signature _____
Date _____

APPENDIX E – ITGS ONLINE MODULE SURVEY

ITGS Online Module Survey

Grade _____
Nationality _____
Gender _____

Please circle the response that best fits your feelings on the questions below.

The quality of the module content, graphics, and navigation:

Very Poor		Average		Very Good
1	2	3	4	5

The quality of the streaming sound and video when applicable:

Very Poor		Average		Very Good
1	2	3	4	5

The extent to which the instructor encouraged class participation:

Very Poor		Average		Very Good
1	2	3	4	5

The instructor's communication skills:

Very Poor		Average		Very Good
1	2	3	4	5

The clarity with which the module goals were communicated:

Very Poor		Average		Very Good
1	2	3	4	5

The degree to which completing this module online helped you gain a better understanding of the class material:

Very Little		Average		Very Much
1	2	3	4	5

The extent to which you felt you were part of a 'class':

Very Little		Average		Very Much
1	2	3	4	5

Opportunity for practicing what was learned was:

Very Poor		Average		Very Good
1	2	3	4	5

The intellectual challenge presented was:

Very Poor		Average		Very Good
1	2	3	4	5

The amount of effort you put into this module in comparison to a teacher lead classroom lesson was:

Much Less		Average		Much More
1	2	3	4	5

The amount of enjoyment participating in this module in comparison to a teacher lead classroom lesson was:

Much Less		Average		Much More
1	2	3	4	5

Short Answer
Please take a few moments to share your thoughts in writing below.

If you were to take this course online for an entire school year, what would be some of your greatest challenges?

What aspects of this module contributed most to your learning?

What aspects of this module detracted from your learning?

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