

INFORMATION SYSTEMS EDUCATION JOURNAL

In this issue:

4. **Security Engineering Lessons Learned for Migrating Independent LANs to an Enterprise Environment**
Robert L. Marchant, Penn State University
Thomas Bonneau, Sotera Defense Solutions
10. **Implementing an Integrated Curriculum with an Iterative Process to Support a Capstone Course in Information Systems**
Bryan Reinicke, University of North Carolina Wilmington
Thomas Janicki, University of North Carolina Wilmington
Judith Gebauer, University of North Carolina Wilmington
18. **A Pedagogical Approach Toward Teaching An Information Systems Student How To Conduct A Web Usability Study For An Honors Project: A Case Study.**
Gayle Jesse, Thiel College
33. **An Exploratory Study of the use of Video as an Instructional Tool in an Introductory C# Programming Course**
Jason H. Sharp, Tarleton State University
Leah A. Schultz, Tarleton State University
40. **Building an Effective Interdisciplinary Professional Master's Degree**
Douglas M. Kline, University of North Carolina Wilmington
Ron Vetter, University of North Carolina Wilmington
Karen Barnhill, University of North Carolina Wilmington
50. **Ten Year Assessment of Learning Outcomes of a Computer Information Systems (CIS) Program**
Samuel Abraham, Siena Heights University
59. **Wiki Mass Authoring for Experiential Learning: A Case Study**
Harold Pardue, University of South Alabama
Jeffrey Landry, University of South Alabama
Bob Sweeney, University of South Alabama
71. **Information Systems Curricula: A Fifty Year Journey**
Herbert E. Longenecker, University of South Alabama
David Feinstein, University of South Alabama
Jon D. Clark, Colorado State University

The **Information Systems Education Journal** (ISEDJ) is a double-blind peer-reviewed academic journal published by **EDSIG**, the Education Special Interest Group of AITP, the Association of Information Technology Professionals (Chicago, Illinois). Publishing frequency is six times per year. The first year of publication is 2003.

ISEDJ is published online (<http://isedj.org>) in connection with ISECON, the Information Systems Education Conference, which is also double-blind peer reviewed. Our sister publication, the Proceedings of ISECON (<http://isecon.org>) features all papers, panels, workshops, and presentations from the conference.

The journal acceptance review process involves a minimum of three double-blind peer reviews, where both the reviewer is not aware of the identities of the authors and the authors are not aware of the identities of the reviewers. The initial reviews happen before the conference. At that point papers are divided into award papers (top 15%), other journal papers (top 30%), unsettled papers, and non-journal papers. The unsettled papers are subjected to a second round of blind peer review to establish whether they will be accepted to the journal or not. Those papers that are deemed of sufficient quality are accepted for publication in the ISEDJ journal. Currently the target acceptance rate for the journal is about 45%.

Information Systems Education Journal is pleased to be listed in the 1st Edition of Cabell's Directory of Publishing Opportunities in Educational Technology and Library Science, in both the electronic and printed editions. Questions should be addressed to the editor at editor@isedj.org or the publisher at publisher@isedj.org.

2013 AITP Education Special Interest Group (EDSIG) Board of Directors

Wendy Ceccucci
Quinnipiac University
President - 2013

Leslie J. Waguespack Jr
Bentley University
Vice President

Alan Peslak
Penn State University
President 2011-2012

Jeffrey Babb
West Texas A&M
Membership

Michael Smith
Georgia Institute of Technology
Secretary

George Nezlek
Treasurer

Eric Bremier
Siena College
Director

Nita Brooks
Middle Tennessee State Univ
Director

Scott Hunsinger
Appalachian State University
Membership Director

Muhammed Miah
Southern Univ New Orleans
Director

Peter Wu
Robert Morris University
Director

S. E. Kruck
James Madison University
JISE Editor

Nita Adams
State of Illinois (retired)
FITE Liaison

Copyright © 2013 by the Education Special Interest Group (EDSIG) of the Association of Information Technology Professionals (AITP). Permission to make digital or hard copies of all or part of this journal for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial use. All copies must bear this notice and full citation. Permission from the Editor is required to post to servers, redistribute to lists, or utilize in a for-profit or commercial use. Permission requests should be sent to Nita Brooks, Editor, editor@isedj.org.

INFORMATION SYSTEMS EDUCATION JOURNAL

Editors

Nita Brooks
Senior Editor
Middle Tennessee
State University

Thomas Janicki
Publisher
University of North Carolina
Wilmington

Donald Colton
Emeritus Editor
Brigham Young University
Hawaii

Jeffrey Babb
Associate Editor
West Texas A&M
University

Wendy Ceccucci
Associate Editor
Quinnipiac University

Melinda Korzaan
Associate Editor
Middle Tennessee
State University

George Nezek
Associate Editor

Samuel Sambasivam
Associate Editor
Azusa Pacific University

ISEDJ Editorial Board

Samuel Abraham
Siena Heights University

Cynthia Martincic
Saint Vincent College

Michael Smith
Georgia Institute of Technology

Ken Corley
Appalachian State University

Fortune Mhlanga
Lipscomb University

Karthikeyan Umapathy
University of North Florida

Gerald DeHondt II

Muhammed Miah
Southern Univ at New Orleans

Stuart Varden
Pace University

Janet Helwig
Dominican University

Alan Peslak
Penn State University

Leslie Waguespack
Bentley University

Scott Hunsinger
Appalachian State University

Bruce Saulnier
Quinnipiac University

Laurie Werner
Miami University

Mark Jones
Lock Haven University

Mark Segall
Metropolitan State University of
Denver

Bruce White
Quinnipiac University

James Lawler
Pace University

Anthony Serapiglia
St. Vincent College

Peter Y. Wu
Robert Morris University.

Terri Lenox
Westminster College

Li-Jen Shannon
Sam Houston State University

Ulku Yaylacicegi
Univ North Carolina Wilmington

Michelle Louch
Robert Morris University

A Pedagogical Approach Toward Teaching An Information Systems Student How To Conduct A Web Usability Study For An Honors Project: A Case Study.

Gayle Jesse
gjesse@thiel.edu
Thiel College
Greenville, PA 16125

Abstract

The purpose of this paper is to provide educators with a course model and pedagogy to teach a computer information systems usability course. This paper offers a case study based on an honors student project titled "Web Usability: Phases of Developing an Interactive Event Database." Each individual phase—creating a prototype along with usability testing, defining a technical structure, and designing a usable interface—is equally valuable to the entire process of interactive web development. A distinct significance is present within each phase, which emphasizes the importance of completing every step in the development process. Unlike businesses that suffered when the Dot-com bubble burst, businesses that acknowledge the diverse levels of understanding and recognize that implementation of each phase directly affects the success of the business will prosper in this age of technology. This paper focuses primarily on the prototype and usability testing phase. With that in mind, an extensive background and explanation of phase one in developing an interactive event database is presented for the reader; the honors student paper did, however, present an all-encompassing understanding of web technologies. Additionally, this paper provides a method for developing the requirements to conduct and evaluate an honors project. Finally, this paper concludes by considering the study's limitations and suggestions for further research.

Keywords: Pedagogy, Prototype, Usability, Case Study, Project-Based Learning, Teaching A Usability Study Course

1. INTRODUCTION

Creating a successful pedagogical approach for a course can sometimes be a difficult task. Teachers often seek input from fellow teachers or additional research to aid in the development of a course they have not taught before. In this case study, the teacher was a mentor for an Information Systems honors student. The student wanted to conduct a web usability study on the current events calendar of a community website and design a new "interactive" events calendar that was database driven. With website technologies growing at a phenomenal pace, web usability testing is a key to creating a

website that is easy and pleasant to use. In the world of e-commerce marketing and communication, an easy-to-use website creates the "stickiness" (duration) needed to keep consumers on a site, and usability testing aids increased "stickiness" (Laudon, 2010).

The student grounded this project in the presupposition that the Internet has provided businesses with a potentially beneficial marketing opportunity. Moreover, the student felt that in today's society the benefits of technology are often overlooked or misused. A prime example was the Dot-com bubble burst; countless businesses failed to prosper because

they did not effectively make use of web technologies. These organizations did not understand the increased demands of conducting business over the Web and failed to consider many elements that differed between Web and storefront business interactions. Additionally, the student stated a strong interest in providing ways in which technology can aid in communication effectiveness and efficiency. The interest in utilizing technology toward effective communication made the student feel that online interactive databases are an intriguing and powerful tool. Furthermore, the student cited the capabilities of a database for outputting effective and efficient results, which was observed from prior classroom and personal experiences. For example, an individual can obtain database results immediately based on specific and customizable searches rather than browsing an entire site or webpage fruitlessly. The student felt that a website is more usable if narrowed options or categories can be employed such as: name, price, date, or keywords, and then clicking a "Search" button tool. The returned results are normally valued because the results are typically an organized list with specific relevance associated with one's original browsing interest. This, in return, informs the individual and results in effective communication between the client and the business/organization.

2. LITERATURE REVIEW

The following literature review defines pedagogy, case studies, using case studies as educational applications, and the Thiel College honors program, student honors project requirements, and teacher/mentor requirements.

2.1 Pedagogy - Define

The Oxford English Dictionary defines *pedagogy* as "the method and practice of teaching, especially as an academic subject or theoretical concept" (Pedagogy, n.d.). World Bank (n.d.) research indicates that the way to teach is changing. New pedagogies must be utilized because the old pedagogies based on teacher-controlled learning that is highly formal and standardized is no longer relevant. In the 21st Century, students are learning by critical thinking, active learning, problem solving skills, communication (making connections and expressing oneself), and contextualized knowledge (Kharbach, n.d.). Further research

by the National Training Laboratory shows that the amount of new information learners retain depends on how the information is presented (World Bank, n.d.). Summarizing the Learning Pyramid (World Bank, n.d.), students learn best when they are actively engaged in their own learning. Confucius said nearly 2,500 years ago, "I hear and I forget. I see and I remember. I do and I understand." (Moncur, n.d.). For the purpose of this research paper, the learning pyramid proves that the honors project in this paper follows the 21st Century pedagogy.

2.2 Case Study - Defined

Simply stated, the purpose of writing cases and sharing them with others is to share experience without all of us actually having to be in the same place (GTTP, 2012). Technically stated, a case study can be defined as the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves (Case Studies, n.d.). The pedagogy for writing this case study was based on Robert K. Yin's (1993) research. Additionally, this paper is considered a "Critical Instance Case Study" (Case Studies, n.d.). A critical instance case study occurs where one or more sites are examined for either the purpose of examining a situation of unique interest with little to no interest in generalizability or to call into question or challenge a highly generalized or universal assertion. This method was chosen because it is useful for answering cause and effect questions. The research presented here will determine if the pedagogy utilized with the honors student resulted in an effective final project. Ultimately, in designing the study, researchers need to make explicit the questions to be explored and the theoretical perspective(s) from which they will approach the case. There are three most commonly adopted theories: Organizational Theories, Social Theories, and Individual Theories. Individual theories focus primarily on the individual's development, cognitive behavior, personality, learning and disability, and interpersonal interactions of a particular subject (Case Studies, n.d.). Finally, this paper undertakes an approach rooted in the Individual Theories.

2.3 Case Studies as Educational Appliances

What types of educational appliances do case studies provide for teachers? The 1950s marked

the dawn of a new era in case study research, namely the utilization of the case study as a teaching method. "Instituted at Harvard Business School in the 1950s as a primary method of teaching, cases have since been used in classrooms and lecture halls alike, either as part of a course of study or as the main focus of the course to which other teaching material is added" (Armisted 1984). Armisted (1984) looked at eight types of case studies, offered pros and cons of using case studies in the classroom, and offered suggestions for successfully writing and using case studies. If using case studies in the classroom is of interest, further supporting research can be found by reviewing Merseth (1991) "*The Case for Cases in Teacher Education*", Boehrer (1990) "Teaching With Cases: Learning to Question. *New Directions for Teaching and Learning*", and Boyce (1993) "*The Case Study Approach for Pedagogists*".

2.4 Honors Program - Defined

The Thiel College Academic Catalog (2011-12), pages 177 and 178, summarized the Honors Program as follows: The goals of the Honors Program at Thiel College are to provide an integrative education designed to enhance critical thinking, to enable students to make connections among disciplines and to promote a world view grounded in the exploration of ideas, ideologies and values. These goals are fostered in an environment of small classes, free intellectual inquiry and close association with professors.

In order to provide an appropriate and challenging educational structure, the Honors Program provides a core set of courses that is separate from the College's general education requirement. This core is described in the Honors Program course offerings. It includes some freshman-level classes that are variations of college-wide courses, and a unique sequence of courses during the sophomore and junior years designed specifically for Honors Program members. Participation in the Honors Program permits a combination of the Honors requirements with any academic major with the exception of education.

The honors student course requirements can be found in the appendix (section "Honors Program Requirements").

2.5 Honors Project Requirements

The capstone research project for Honors Program students is **HON 322— Interdisciplinary Course IV: Independent Project** and is worth two credit hours. Students apply the work done in Honors Interdisciplinary Course III by choosing a project related to their own special interests and work independently with the course professor and a mentor. The project integrates library research with a student's own original contributions, which culminates in a public presentation of the project.

The student(s) final project is evaluated using four different criteria:

1. Mentor's evaluation of paper.
2. Mentor's evaluation of project process.
3. Second reader's evaluation of paper.
4. Mentor's or Director's evaluation of oral presentation.

Finally, if the student needs to purchase supplies, the Thiel College Honors Program reimburses students up to \$150.

2.6 Teacher Requirements

Per a discussion with the director of the Honors Program, mentors have four major responsibilities: grade the final paper, teach the student how to conduct a research project, teach any other required curriculum, and create a meeting schedule between the mentor and the student. Thus, the teacher/mentor graded the paper according to the supplied grading rubric discussed in section 5 of this paper. Additionally, the teacher/mentor created a meeting schedule that is also discussed in section 3.4. Also, the teacher/mentor instructed courses on all three phases of this project; however, only one phase (Phase I – Usability Testing) is discussed in detail. Finally, the teacher/mentor assisted the student with conducting the research project. To do this, the teacher supplied the student with three required readings:

1. Theoretical Frameworks in Qualitative Research by Anfara & Mertz (2006). Only the introduction was assigned.
2. The literature review of a step-by-step guide for students by Ridley (2008). Only Chapters 2, 3, 6, and 8 were assigned.
3. Reading and understanding research by Locke & Silverman (2004). Chapter 3 and Appendices B and C were assigned.

3. METHODOLOGY

The field of Web Design and Usability has a step-by-step approach that has been identified as a method to successfully solve a given problem.

The following section encompasses the erudite process of teaching students how to conduct a web usability study.

3.1 Course Organization

To teach the honors student, the teacher explained that there is a process to be followed in order to provide the best experience for an Internet user and increase business on websites. The process of developing a web application was explained to the student and the student was advised to gather a brief background on the factors that make an interactive web experience: the Internet, databases, and HTML. The teacher also explained that a usability project was divided into three distinct phases of developing a web application: creating a prototype, defining a technical structure, and designing the interface. To aid the student's research, the teacher provided a listing of suggested readings, which included insights from Steve Krug, a web usability author, and Carolyn Snyder, a paper prototyping author, because this project focused heavily on web usability testing and the prototyping process. Due to the scope of the project, the student only created a paper prototype instead of a digital version. Finally, to ensure that the project would be completed on time, the teacher created a course meeting and due date schedule (section 3.4 and appendix).

3.2 Teaching Usability Study Courses

Phase I of the student project consisted of three stages: Analysis, Prototyping, and Usability Testing. The analysis stage is very important because it involves making an evaluation of the current site. To perform this stage, a site visit is normally essential. The objective of the site visit is to learn how the users interact with the interface. Specifically, this student wanted to learn if a user can effectively conduct a search within the current Community Calendar page. In order to reach the objective of the site visit, the student scheduled a time for the site visit. Conducting a site visit can be done by interviews, surveys, video, or a think-out-loud session. This student chose to conduct an interview. Once the site visit was completed, the student formulated a site visit report with the collected data. By

summarizing the site visit report, the student found that calendar event search results were simply a long list of text and only allowed the user to search for event by date. The current design did not give the user the option to customize and narrow the search or choose how to display the results (ex: monthly calendar form).

Steve Krug's (2006) book titled, *Don't Make me Think!*, honors Amazon.com for their search approach. He highlighted how most book sites prompt the user to choose from a keyword category (title, author, keyword), while Amazon.com simply allows the user to type any keyword and the search generates results. After analyzing the current web page, undertaking the site visit, researching other community calendar event web site pages, and reading Krug, the student realized that the current web page did not meet usability standards. This prompted the student to design a clearer and more professionally visual site to redesign the current Community Calendar page. Next, the student submitted a plan to redesign the Community Events page, which reduced the user time needed to find an event and resulted in increased efficiency and user confidence.

When working with the web development process, a significant term is "prototype." A prototype is an illustration of a project concept (Houde, 3). A prototype allows the user to put his or her ideas in a form that can be viewed tangibly. Many industries have varying ideas from which prototypes are formed. Materials such as paper, pencils, scissors, glue, website screenshots, Post-its, index cards, manila folders, printed objects, design software, and HTML code are used to produce a prototype in the computer science discipline (Medero, 2007).

Troy Janisch, president and founder of Icon Interactive, lays out four qualities that can be evaluated through designing prototypes. These qualities are: navigation and flow, content, layout, and functionality or interactivity. Navigation and flow is observed through user input that is based on how organized and natural the site and labels are. The effectiveness of a site's content and layout, such as the writing approach used and scarcity of information or too much clutter, can be measured through prototypes. Prototypes are also valuable to determine what functions are beneficial and enhance the interactive experience (Janisch, 2007). As represented by its qualities, a

prototype helps to define a professional, appealing site.

Following the analysis stage, the student began the prototyping process. It should be noted that it is common to produce multiple prototypes, and in fact, this is often necessary in order to fully meet user or client needs. This student project only included one prototype, which was simply created on notebook paper by using colored pencils. Medero (2007), an interface designer for the Linguistic Data Consortium at the University of Pennsylvania, addressed the idea that many designers think hand prototypes are not taken seriously. He explained that designers should take advantage of the simplicity of hand prototypes because it is less intimidating than a formal, high-tech sample. Medero (2007) recommended paper prototyping to "lighten the mood and engage a more diverse group," especially during usability testing.

Krug (2006) offered many recommendations for usability and effective web page design. For example, Krug discussed the label for a search button. He stated that it should simply be labeled "Search." He emphasized how easy it is to confuse a user with the label of any button, but especially the search button. The word "Search" is more effective than "Find," "Quick Find," "Quick Search," or "Keyword Search" (Krug, 67). Krug (2006) also provided further recommendations for making the experience easier for a user on keyword searches and suggested that keyword search should not demand case-sensitive words or insist on punctuation. Krug referred to this as "punishing me for not doing things your way." For example, with credit card and social security entries, the user should never have to worry about following a certain format (Krug, 164).

Drawing on these and other recommendations from Krug, the student revised the notebook prototype. The teacher reviewed the new hand-drawn notebook-paper-sized prototype and gave the student permission to create a poster-sized prototype. The student made the poster-sized prototype using poster board and removable screenshots of every individual element of the current homepage and Community Calendar page. The elements of the two pages were adhered to the poster board using Velcro, which allows all elements to be moved or arranged, as the client desires. Finally, paper prototypes have a great influence on improving the final product. Within different usability testing

stages, the prototypes must be rearranged or adapted. Paper prototypes allow for more time on actually moving the improvement process along rather than spending hours editing code.

Throughout the explanation of a prototype (second stage), the term "usability testing" was used frequently and is done periodically throughout designing prototypes. Krug (2006) defined *usability* as the process of being certain that "...something works well: That a person of average (or even below average) ability and experience can use the thing...for its intended purpose without getting hopelessly frustrated" (5). Carolyn Snyder, a well-known author of prototyping, stated, "For much of its history, paper prototyping has been a tool clenched firmly in the hand of the academic researcher or usability specialist. Like any useful tool, though, its greatest potential can be reached by placing it in the hands of the non-specialist along with instructions for its proper use" (Janisch, 2004). Although Snyder focused on paper prototyping, all prototyping can be considered from this viewpoint. The purpose of creating a prototype is to follow through with a process that consists of collecting feedback from people who are prompted to perform tasks by using the given prototype (whatever prototype that may be—paper or digital). It is certain that a prototype is most useful during the usability testing stage of the development process.

According to the Guide to Planning and Conducting Usability Tests (University, 2008), there are four types of tests to choose from and they can be completed at any point of the development process. These tests are: explanatory, assessment, validation, and comparison. The explanatory test is executed by providing the user with a simulation of a webpage and then the user is asked to explain his or her thoughts on what the page elements do and what he or she would like to gain from the page. The assessment test is where the user is prompted to complete a task after the prototype is basically perfected and is only tested for effective implementation. The validation test is used when certain timing standards are desired to be reached in order to measure how well all the website features merge. As for the comparison test, this can be conducted at any stage of the design process and is used to compare multiple design ideas by conducting the same task using each design. In this case study, the prototype was ultimately tested using a combination of the explanatory

and assessment methods. Also, the usability testing procedures conducted in this project replicated the suggestions by Jeffery Rubin, author of the *Handbook of Usability Testing* (Rubin, 2011).

The first step in usability testing is to professionally and effectively introduce the usability test to the test participants. This means that the proctor of the test needs to explain the purpose of the test using a pre-written script and reassure the participants that they were not being tested (University, 2008). Next, similar to Krug's script example printed in *Don't Make me Think!*, the participants should be asked to simply describe their initial thoughts of the site (150). Next, the participants should be asked to search for certain things on the site that the client desires. This can be any number of elements resulting in one or many different tests for the user to complete. A key aspect to remember during the testing is for the proctor to remain only as an observer until the participant asks for assistance, and then the proctor should encourage the participants to think out loud (University, 2008). The proctor should take notes on the notes sheet and write down his or her observations. If the proctor has questions for the participant that need clarification, the questions should be noted in a questions page left for after the test is completed. Finally, the proctor should debrief the participant by obtaining a clear understanding of the participant's overall experience and take notes of any other comments that the participant wants to share.

3.3 Student Project Requirements

The director of the Honors Program only stated one requirement for the report, which was the report needed to be at least 20 pages in length. All other student project requirements were set by the teacher/mentor. Therefore, the teacher set the minimum length to the required 20 pages. Additionally, the teacher also required the student to write in APA style versus the typical MLA style used in a bachelor's degree program. This change was implemented so the teacher could reinforce how to write research papers to prepare the student for writing in a master's degree program. Finally, the teacher required the student to follow a sample outline and expand the paper as needed. Below is the outline provided:

- Introduction
- Business Case

- Site Visit
- Prototype
- Usability Test
- Recommendations
- References
- Appendix

3.4 Schedule

As advised by the director of the Honors Program, the teacher/mentor created a meeting schedule for the student. The schedule played a major role in ensuring that the project would be completed on time. The appendix (section "Project Schedule") includes a detailed spreadsheet of meetings, lectures, and due dates.

4. CASE STUDY OF STUDENT USABILITY PROJECT

A case study can be defined as the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves (Case Studies, 2012).

4.1 Usability Testing

To begin the usability testing, the teacher had the student create the **Usability Test Script**; the script for this project follows.

Hi, my name is [Name], and I'm going to be walking you through this session.

Let me explain why I have asked you to do this session today. I am testing a website of which I am redesigning a page and adding a database feature and I would like to see what it is like for an average person to use, rather than relying solely on my perception since I am working close to the project.

I want to make it clear right away that we are testing the site, not you. You can't do anything wrong during this session. I want to hear exactly what you are thinking, so please don't worry that you're going to hurt my feelings. I want to improve the site, so I need to know honestly what you think. As we go along, I am going to ask you to think out loud, to tell me what's going through your mind so I can take note of an average user's thinking process and perception.

If you have questions, just ask. I may not be able to answer them right away, since I am interested in how people do when they don't have someone sitting next to them, but I will try to answer any questions you still have when we're done.

If you would, I am going to ask you to sign something. It simply says that we have your permission to use the results from your session for this project. The information will only be seen by me and my honors project mentor.

Do you have any questions before we begin?

DEMOGRAPHICS

Before we look at the site, I'd like to ask you just a few quick questions to get to know you and how you currently use the Web.

Q1: First, what is your academic field of interest?

Q2: What exactly does your field of interest do?

Q3: Now, roughly how many hours a week would you say you spend using the Internet?

Q4: How do you spend the time you pass on the Internet?

Q5: Do you have any favorite websites?

Q6: What is the purpose of the site?

Q7: What do you like about this site?

Q8: On a scale of one to five (one being not often at all and five being very often), how often do you use search engines to browse the Internet for what you want?

Q9A: What search engine do you prefer?

Q9B: Why do you prefer the search engine you mentioned in the previous question?

Q10: Have you ever used Bing to search for events?

Okay, awesome, thanks! We are done with the background questions and we can start looking at the site.

This test will be performed using paper prototypes rather than digital so the interaction is limited. If at any time you would naturally type something please use this sheet of paper to write down what you would type. And, anything below this (point) footer is an element that would replace another element upon interaction like a click.

HOMEPAGE TESTING

Q11A: First I'm just going to ask you to look at this page and tell me what you think it is?

Q11B: What strikes you about it?

Q11C: What you think you would click on first? And, again as much as possible, it will help me if you can try to think out loud.

Q12: What would you do to find local community events?

Q13: Would you see it as beneficial to swap the search for local events button with the events box?

PROMPTS TESTING

P1: Okay, moving onto actually using the site. Now that we are on the events page, search for events in the category of education for the month of March and to print the results in calendar view

Q14: If you were to make the calendar feature better, what would you suggest?

Q15: Having the Print Results button at the bottom or top of the page, would you prefer it to be left, center, or right aligned?

P2: Okay, great! Next, what would you do to search for local bowling opportunities for the day of March 31st?

Q16: Awesome! Now, just a few questions to sum everything up...What is your overall satisfaction with the search experience on a scale of one to five? Lastly, do you have any questions that I couldn't answer during the test that you would like answered now?

Q17: And, what would you suggest to improve the homepage?

Q18: What would you suggest to improve the events page?

When the usability testing is complete, an analysis of the participant data collected is to be conducted. The easiest was to organize the data is to base the organization on the format of the notes sheet that was used to write down observations during testing. The gathered data from the one to many tests conducted should be analyzed for patterns of design dissatisfaction, wording and labeling confusion, button placement, and in this project case - overall effectiveness of the customized search database. At this point, the data gathered though the conduction of the usability test should provide significant insights to the designer/developer to create a redesigned site that the client will benefit from.

4.2 Reporting Usability Testing Results

The student analyzed each question asked during the usability test, an example of how the

student organized and then wrote up the collected data follows.

Q18: What would you suggest to improve the events page?

Figure 1: Prompts Testing - Question 18 – Events Page Suggestions

Participant	Q18
1	display recent searches
2	NONE
3	bigger font in footer
4	make drop-down calendar bigger; add select all-print all option
5	add Select All option
6	option to search with Calendar or List View results
7	move select box to left under photo
8	make March 2011 a link; move Search button

Many of the suggestions for this question were already mentioned through responses to a previous question. For example, adding a Select All printing option, viewing the results in calendar view, moving the Search button, and making the "March 2011" calendar title a link were all repetitive concerns. Others addressed displaying recent searches made by other users, increasing the size of the drop-down calendar and the font of the footer, and moving the select boxes to the left, under the event thumbnail image.

4.3 Case Study - Student Paper

The table of contents created by the student is below.

INTRODUCTION	1
Project Beginnings	1
Client Description	1
Problem and Proposal	3
Scope	4
Development Phases	5
PHASE I:	6
Analysis	6
Prototyping	7
Usability Testing	9
Usability Testing Results	12
Background Questions	12
Homepage Testing	19
Prompts Testing	23
PHASE II:	29
Databases	29
Server-side Development	32
Application Databases vs. Server Databases	35
PHASE III:	37
Client-side Development	37
History of the Internet	37

History of the Web	38
HyperText Mark-up Language	39
CONCLUSION	41
REFERENCES	43
APPENDIX A	46
APPENDIX B	49
APPENDIX C	53
APPENDIX D	56

5. COURSE ANALYSIS

The final research project required of the honors students is part of **HON 322—Interdisciplinary Course IV: Independent Project**. The director of the Honors Program distributed the grading rubric to the Honors Project Students, Mentors, and Second Readers. The grading rubric also clearly defined the grading scale for the Four Evaluation Areas mentioned in section 2.5 ("Honors Project Requirements"), and it properly assessed the student for the Honors IV Course. The grading rubric document can be found in the appendix (section "Grading Rubric").

6. CONCLUDING REMARKS

Two empirical research issues limit this study. The first issue is that the study was conducted on and by a single student; further studies could be done involving a greater number of students and on a diverse population. Secondly, the experience of a single researcher may raise concerns because a single interpretation may be subjective and possibly different outcomes could have resulted if conducted by several or different researchers.

By reflecting on this case study, the researcher learned that teaching pedagogy to one student in the manner presented in the paper proved successful. The student successfully completed the research project with an "A" grade and far surpassed the expectations of the teacher. The student effectively applied the research theories and computer information systems curriculum taught in the final project.

The researcher suggests that further research should be conducted with a group of students. Additionally, the researcher would conduct a follow-up survey at the end of the course. A follow-up survey would add the quantitative elements, making the study more thorough and complete.

In closing, the purpose of writing cases and sharing them with others is to share experience beyond the confines or limits of geography (GTPP, 2012). This case study paper presented more than just a description of sharing one experience; it shared applicable research and effective pedagogy to use in the 21st Century classroom.

7. REFERENCES

- Anfara, V. A., & Mertz, N. T. (2006). Introduction. *Theoretical Frameworks in Qualitative research* (pp. xiv - xxxii). London: SAGE.
- Armisted, C. (1984). How useful are case studies. *Training and Development Journal*, 38 (2), 75-77.
- Boehrer, J. (1990). Teaching with cases: Learning to question. *New Directions for Teaching and Learning*, 42 41-57.
- Boyce, A. (1993) *The Case Study Approach for Pedagogists*. Annual Meeting of the American Alliance for Health, Physical Education, Recreation and Dance. (Address). Washington DC.
- Case Studies. (n.d.). *Welcome to Writing@CSU*. Retrieved July 12, 2012, from <http://writing.colostate.edu/guides/research>
- GTPP. (2012). *HowToWriteAGoodCase.pdf*. Retrieved June 8, 2012, from www.gttp.org/docs/HowToWriteAGoodCase
- Houde, S. & Hill C. *What do prototypes prototype?* Retrieved February 12, 2011 from <http://www.sics.se/fal/kurser/winograd-2004/Prototypes.pdf>
- Janisch, T. (2004, June 1). *How good does your web site look on paper?* Retrieved February 12, 2011 from <http://evolt.org/node/60331/>
- Kharbach, M. (n.d.). The 21st century pedagogy teachers should be aware of. *Educational Technology and Mobile Learning*. Retrieved July 12, 2012, from <http://www.educatorstechnology.com/2011/01/21st-century-pedagogy-teachers-should.html>
- Krug, S. (2006). *Don't make me think!: A common approach to web usability*. Berkley, California: New Riders Publishing.
- Laudon, K., & Traver, C. (2010). *E-Commerce 2011: business, technology, society*. (7th Edition ed.). Upper Saddle River, NJ: Pearson - Prentice Hall.
- Locke, L. F., & Silverman, S. J. (2004). *Reading and understanding research* (2nd ed., pp. 29-58). Thousand Oaks, Calif.: Sage Publications.
- Medero, S. (2007, January 23). *Paper prototyping*. Retrieved February 12, 2011 from <http://www.alistapart.com/articles/paperprototyping/>
- Merseth, K. K. (1991). *The Case for Cases in Teacher Education*. RIE. 42p. (ERIC).
- Moncur, L. (n.d.). *Quotation details*. (Quotation #25848). Retrieved from <http://www.quotationspage.com/quote/25848.html>
- Pedagogy. (n.d.). In *Oxford English Dictionary*. Retrieved from <http://dictionary.oed.com>
- Ridley, D. (2008). *The literature review a step-by-step guide for students* (Repr. ed., pp. 16-27, 28-33, 80-88, 117-129). Los Angeles [u.a.: SAGE.
- Rubin, J., & Chisnell, D. (2011). *Handbook of Usability Testing How to Plan, Design, and Conduct Effective Tests*. (2nd ed.). Hoboken: John Wiley & Sons, Inc..
- Thiel College. (2011). *Academic-Catalog-2011-12.pdf*. *Thiel College*. Retrieved July 9, 2012, from www.thiel.edu/academics/academic_catalog/pdf/Academic-Catalog-2011-12.pdf
- World Bank. (n.d.). *The learning pyramid*. Retrieved from the World Bank Web sites resources.worldbank.org/DEVMARKETPLACE/Resources/Handout_The-LearningPyramid.pdf
- Yin, R. K. (1993). Advancing Rigorous Methodologies: A Review of 'Towards Rigor in Reviews of Multivocal Literatures.' *Review of Educational Research*, 61, (3).

Appendices

Honors Program Requirements

The core of required courses, which substitutes for the general College Integrative Requirement, consists of the following:

Course Number	Course Name	Course Credit Hours
HON 115	History of Western Humanities I	4 CH
HON 111	Oral and Written Expression I	3 CH
HON 112	Oral and Written Expression II	3 CH
HON 125	History of Western Humanities II	4 CH
HON 132	Interpreting the Jewish and Christian Scriptures	3 CH
HON 212	Interdisciplinary Courses I	3 CH
HON 222	Interdisciplinary Course II	3 CH
INDS 210	Science and Our Global Heritage I	4 CH
INDS 220	Science and Our Global Heritage II	Choose 1
One	natural or physical science laboratory course	4 CH
HON 312	Interdisciplinary Course III	2 CH
HON 322	Interdisciplinary Courses IV	2 CH
Foreign Language competency:	Two semesters (check for possible exemption)	0-6 CH
Mathematics competency	See Below	0-4 CH

Mathematics competency:

For the BA degree: pass the mathematics placement test at the pre-calculus level or earn a grade of C- or higher in any math course except MATH 011 or MATH 121. 0-4 CH

For the BS degree: pass the mathematics placement test at the calculus entry level or earn a grade of C- or higher in MATH 141 or any calculus course. 0-4 CH

Writing Intensive Course (WIC) requirement: Satisfactory completion of five WIC courses, not more than three of which can be in the major.

What are Writing Intensive Courses? A student at Thiel College must completed 5 WIC courses to graduate. WIC courses can be completed in any combination of major, minor, core and elective courses that are designated as WIC. However, to fulfill the requirement no more than three courses can be in the same discipline.

Course Offerings

HON 111—Oral and Written Expression I (3 CH) This course for freshman Honors Program students integrates fundamental components of oral and written expression by focusing on similarities and differences between the two forms, emphasizes an introduction to learning in the liberal arts tradition, a comparison of academic and professional disciplines, critical thinking skills, ways of identifying and testing evidence and hypotheses, and the use of primary sources in writing and speech production. Offered every fall.

HON 112—Oral and Written Expression II (3 CH) This course is a continuation of HON 111. It refines the skills introduced in HON 111 and provides further opportunities for formalizing the components of oral and written expression and multidisciplinary learning. The course enables students to refine their critical thinking and problem solving skills in their oral and written analyses of the various subjects and styles of academic writing and oral expression. Students master documentation of sources and extend their knowledge of research skills and oral and written delivery modes. Offered every spring.

HON 115-125—History of Western Humanities I & II (4 CH) This two-semester sequence surveys material and cultural history from antiquity through post-modernism. The interdisciplinary approach encourages students to discover connections between historical periods and artistic style periods in the areas of philosophy, religion, art, architecture, music, literature and theater. Students are encouraged to reflect critically on the connections they discover and find relationships to their own lives and experiences. This discovery/reflection model helps provide students with a context by which to understand the values of humanity both as they are expressed in the past and as they are expressed in their own lives. HON 115 offered every fall and HON 125 Offered every spring. (HON 125: WIC)

HON 132—Interpreting the Jewish-Christian Scriptures/Honors (3 CH) The purpose of this course is to assimilate the content, understand the structure and wrestle with the meanings of the writings included in the Judeo-Christian Scriptures. As an Honors course, a minimum amount of time will be spent on lectures that rehash either the content of the text or the biblical material. Class sessions will focus on discussion, centering upon questions, problems and insights precipitated by the readings. A basic assumption of the course is that participants will take responsibility for a thorough reading of the text and related biblical material in preparation for class. (WIC) Offered every spring.

HON 212—Interdisciplinary Course I: Identity (3 CH) The first semester of a year-long integrative course. Through a consideration of the concept of identity, students will participate in a variety of ways to gain skills in problem-solving, speaking, receptiveness to critical discussion of ideas, value centered decision-making, self-reflection and self-discovery. Offered every fall.

HON 222—Interdisciplinary Course II: Identity (3 CH) A continuation of HON 212. Offered every spring.

HON 312—Interdisciplinary Course III: Creativity (2 CH) This course focuses on the topic of creativity in its broadest sense, as a concept relating to an overall approach to life experience, and also its specific applications to the arts, sciences and humanities. Offered every fall.

HON 322—Interdisciplinary Course IV: Independent Project (2 CH) In this course students apply the work of Honors Interdisciplinary Course III by choosing a project related to their own special interests and working independently with the course professor and a mentor. The project integrates library research with students' own original contributions, culminating in a public presentation of the project. (Students who study abroad may fulfill these requirements by completing a project following their international experience.) Offered every spring.

Project Schedule

Week #	Due at Meeting Time	Mon	Wed	Fri	Sat
1 = 1/9 - 1/15					
2 = 1/16 - 1/22					
3 = 1/23 - 1/29	Discuss New Project	Meeting 11:00		Meeting 11:00	
4 = 1/30 - 2/5	Title Thesis Current Site Prototype -Tables -Field Names	Meeting 11:00			
5 = 2/6 - 2/12	Introduction	Meeting 11:00 Teach Usability Pro Mgt			
6 = 2/13 - 2/19	Revised Intro	Meeting 11:00 Teach Phase I Phase II			
7 = 2/20 - 2/26					
8 = 2/27 = 3/5	Intro, Phase I & II Due by Midterm break				
9 = 3/6 - 3/12					
10 = 3/13 - 3/19	1. Review Paper - Intro, Phase I & II 2. Teach - Phase III	Meeting 11:00 Teach Phase III			
11 = 3/20 - 3/26					
12 = 3/27 - 4/2					
13 = 4/3 - 4/9	Conclusion				
14 = 4/10 - 4/16	Presentation				Present
15 = 4/17 - 4/23	Revisions				
16 = 4/24 - 4/30	Paper Due		Paper Due		

Grading Rubric

Designed by Dr. Beth Parkinson

TO: Honors Project Students, Mentors, and Second Readers

RE: Grading for Honors IV Course

I. General Grading Scale

A certain percentage of the total grade will be allotted to each of four areas of evaluation.

1. Mentor's evaluation of paper = 45%
2. Mentor's evaluation of project process = 25%
3. Second reader's evaluation of paper = 15%
4. Evaluation of oral presentation = 15%

200 points represents the total points available for the course. Converting these points into percentages:

1. Mentor's evaluation of paper = 90 total possible points
81-90 = A range 63-71 = C range
72-80 = B range 54-62 = D range
2. Mentor's evaluation of project process = 50 total possible points
45-50 = A range 35-39 = C range
40-44 = B range 30-34 = D range
3. Second reader's evaluation of paper = 30 total possible points
27-30 = A range 21-23 = C range
24-26 = B range 18-20 = D range
4. My evaluation of oral presentation = 30 total possible points
27-30 = A range 21-23 = C range
24-26 = B range 18-20 = D range

Grades for each of the four areas will be given as points. The total points will be added to determine the final letter grade.

- 180-200 = A range 140-159 = C range
160-179 = B range 120-139 = D range

IMPORTANT NOTE TO STUDENTS: Attending all class meetings is a course requirement. If you cannot attend a class meeting, call or leave me a voice mail prior to the meeting. You are responsible for knowing all information given out at all meetings. You are allowed one absence without penalty. Five points will be deducted from your semester point total for each absence after the first one. Only dire circumstances will be granted an exception.

ALL PROJECTS WILL BE ASSEMBLED IN A BINDER AND KEPT ON DISPLAY IN THE HONORS PROGRAM CENTER.

II. Grading Criteria for the Four Evaluation Areas

1. Mentor's evaluation of paper - evaluation criteria
 - a. Format in accordance with agreed-upon discipline style (e.g., MLA, APA, journal publication style of a particular discipline). Includes general format, citations in the text, references, correct Internet citations, etc.
 - b. Well-written introductory section, appropriate lead-in to topic.

- c. Clearly explained topic or thesis.
- d. Good general organization of material - logical flow of ideas.
- e. Adequate review of relevant literature or related research findings.
- f. Adequate transitions between various ideas and sections of the paper.
- g. Good explanations of terminology used.
- h. If charts, graphs, tables, or figures are used, are they easily understood and well set-up?
- i. Spelling, grammar.

"a" through "i" are criteria which are applicable throughout the entire paper. "j" through "n" are applicable specifically to the section of the paper presenting a creative, original, "hands on" element.

- j. Is your position, argument, or solution clearly stated?
- k. Is there a clear distinction between factual information and opinion?
- l. Use of information cited earlier in the paper to support ideas - supportive evidence.
- m. Are the positions, arguments, data analyses, and/or solutions logical, feasible, workable, realistic?
- n. Do you present your viewpoint in a convincing manner?
- o. Ending of paper - Whether the ending is a summary, conclusion, or overview, is the ending well integrated into the paper, and not just a few sentences "tacked on?"

2. Mentor's evaluation of project process - evaluation criteria

One of the purposes of this course is to give students the opportunity to work with a faculty mentor. This is intended to be an integral part of the research process, providing a valuable learning experience.

This portion of the grade is not dependent upon the ease or difficulty of executing the project, since it is expected that everyone encountered some difficult periods throughout the semester. The evaluation is based on the following:

- a. Appointments made and kept by the student, or rescheduled if he/she could not keep the appointment.
- b. The student turned in promised work on time, or made satisfactory arrangements for an extension.
- c. *The student and mentor interacted in a real working relationship, rather than the student doing an independent project (* an especially important criterion).
- d. Student and mentor maintained a dialogue concerning suggestions and possible improvements for the paper.
- e. The student took the initiative in reviewing the relevant literature, using the mentor as a guide, rather than a source for material.
- f. The student took the initiative in writing the creative, original, "hands on" portion of the paper, using the mentor as a guide, rather than a source for ideas.

3. Second reader evaluation of the paper - evaluation criteria

This evaluation will use all the criteria used by the mentor (p. 2 "a" through "o") in evaluating the paper.

4. Evaluation of the oral presentation - evaluation criteria

- a. Length of presentation close to the 12-15 minute time limit.
- b. Good introduction to the topic.
- c. Clear explanation of theme or topic.
- d. Citation of relevant literature related to the topic.
- e. Good transitions between ideas.
- f. Selective use of materials - inclusion of important information, exclusion of less important material not needed for the oral presentation.

- g. If audio-visual aids were used, were they well integrated into the presentation, a useful addition? Were charts or tables easily understood?
- h. Was the creative, original, "hands on" portion clearly presented and easily understood? Were your own ideas clearly delineated from theoretical or empirical data?
- i. Good eye contact with audience.
- j. Good delivery style - not too fast or too slow, good vocal variety, clear speaking.
- k. Notes used as guidelines only, rather than reading from them continuously.
- l. Good ending of presentation.
- m. Answering questions from the audience thoughtfully and competently.