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Enhancing Student Understanding of Database Normalization Using a Competitive Game

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Abstract

The authors report findings from the use of a competitive game to facilitate student learning of database normalization. Recognizing that understanding and applying normalization is difficult for many students, we have designed am interactive, engaging in-class game, the "Normalization Shootout," which pairs students against one another in a single-elimination tournament. Analysis of four years of student tests scores, comparing scores of those who participated in the game versus those who did not, substantiates that the game facilitates student learning. Analysis of student feedback from questionnaires substantiates that students both enjoy the interactive game and believe it helps them learn normalization concepts.

Keywords: Educational games, active learning, motivation, competition

Introduction

Anyone who has watched pre-school age children participate in games has only to observe the nonverbal communication to realize that the children are having fun. Games are important at all ages; for example, one can go to an assisted living facility or nursing home and also find residents enjoying an afternoon game of some type. In reality, almost all of us enjoy games. They bring some fun to our day.

Many of us probably can recall playing a mock baseball game in elementary or middle school to review materials learned in a unit, with half the class "teamed" against the other class. Just like an actual baseball game played outside, those baseball "games" in the classroom encouraged us to get a "hit" with a correct answer so that our team could score more runs than the other team. In the educational environment, games provide variety and can help students learn or review new information, concepts, and so forth. The literature on games in the educational environment spans all levels of education, from pre-school and elementary to post-secondary, university level instruction.

For purposes of this discussion, active learning is described as instruction in a classroom in which students are more involved than in a traditional instructor lecture classroom. Myers and Jones (1993) have defined active learning as learning in which students are involved through talking, listening, writing, reading, and reflecting. Bonwell and Eison define active learning as "instructional activities involving students in doing things and thinking about what they are doing" (1991, p. 5). Their research in the early 1990s suggested numerous activities to allow the instructor to bring more active learning into each classroom. Among their suggestions were debates, games, and role playing. Smith (2002) also called for greater interactive learning in post-secondary business education classrooms because of its effectiveness when compared to passive learning. Interactive learning further provides early and frequent feedback on student learning. A competitive game is but one technique that fits under the active learning "umbrella" of teaching techniques.

As educators, the authors of this article value student participation in the classroom atmosphere. This philosophy matches that of Anderson, Anderson, Davis, Linnell, Prince, and Razmov (2007). Anderson et. al. wanted students alert and engaged throughout the class, with broad participation rather than participation from only a small number of vocal students. Based on the research supporting the value educational games can provide, a "Normalization Shootout" game has been developed that can be used to challenge students to learn database normalization concepts. Initial use of this game was first reported in a 2005 article in *Issues in Information Systems.* That article included a detailed explanation of the concepts being covered related to normalization and the use of the game (Fanguy and Kleen, 2005).

This article provides a background on games and student learning, followed by details of how the game is structured. Analysis of four years of the game in the database classroom is also presented, including differences in student test scores and student perception of the game's usefulness.

Games as Teaching Techniques to Increase Student Learning

As early as 1969, Tansey and Unwin published an annotated bibliography of simulation and academic gaming sources. The Tansey and Unwin publication exhibits the long time attention to the use of games in the classroom environment. Ruben's 1999, 30+ year overview of the impact games can have on teaching and student learning provides further evidence of the value of games in the educational environment. Greer (2005) further notes that PC-based learning simulations have been used for approximately two decades, and new educational games are constantly being developed for purchase. Thus, whether the games are computer-based or not, they have been used over several decades in the classroom.

Dondi and Moretti (2007), in their discussion of learning game selection, note the appropriateness of sports games, action games, driving games, and drill and practice games for helping students apply concepts and rules. In that same article, they identify quiz games, drill and practice, and puzzle games as appropriate for factual knowledge objectives. Eitington (1996), and Meyers and Jones (1993) endorse games, as well as simulations as active learning techniques which provide safe learning settings; all students in a class can take risks in a safe classroom environment.

Numerous articles over the years have specifically supported the value of games as teaching tools in higher education business classes. Whether the discipline is computer science or information systems (Becker, 2001; Lawrence, 2004; Siegfried, 2002), accounting (Cook and Hazelwood, 2002; Fowler, 2006), economics (Dunphy, Meyer, and Simmons, 2003; Gremmen and Potters, 1997), or management (Benek-Rivera and Mathews, 2004; Sarason and Banbury, 2004; Tiger, Benco, and Fogle, 2006; Washbush and Gosen, 2001; and Wheatley, 1999), educators have used games at the post-secondary level of education for many years. Games are popular teaching tools, both in formal educational environments and in business and industry training. Aldrich (2007) reports that quick, interactive simulations (called mini games) that often require less than 20 minutes of student participation or interaction are being embraced by organizations such as Cisco Systems and the Canadian Standards Association to meet training needs of businesses.

Several specific examples further emphasize the value of games in the classroom. Fowler (2006) reported findings from an empirical study of use of simulation games in the financial accounting classroom. He found that students who engaged in active learning scored higher in the comprehension domain of Bloom's Taxonomy when tested. Salemi (2002), reporting on use of an active learning game for a financial markets course, observed that students reached a deeper understanding of concepts of the course, citing as an example that students "think harder during class because they spend time trying to make ideas work rather than trying to understand what the teacher is saying" (p. 725). Lawrence (2004) perceived active learning is important in an introductory data structures course and effectively used a tournament environment in which students improved their programs by entering their code in a competition against code of other students. According to pedagogical results from the course, the game development and friendly competition served as significant motivators and student performance increased. Benek-Rivera and Mathews (2004) reported successful use of several variations of a Jeopardy game in various management courses at the university level over a four-year period. To support their contentions that games are effective, they included various student feedback comments and personal observations of faculty.

Providing an active learning environment by implementing an educational game in a classroom does not automatically enhance student learning. Kane notes that, "while promoting active learning is generally a good thing, the success of an active learning methodology depends not on methodology alone but, ultimately, on the constantly-evolving, dialectical relationship between methodology and learners, mediated by the educator" (2004, p. 275). Kane further notes that the learner's perception plays an important role in whether a particular active learning technique is successful. Boehlje and Eidman also note, "The effectiveness of games as educational tools depends on the administration of the game, the consistency between the game and educational objectives, the interface with other teaching tools, and the learning style of the student. If properly used, they are important tools in the educator's tool kit" (2001, p. 992).

Washbush and Gosen (2001) address further concerns about the research of games in education and note the overall lack of empirical studies on the learning-performance relationship issue. As an example of those gaming articles that lack statistical analysis of learning, Benek-Rivera and Mathews's report on games in the classroom included

teacher reflection and student feedback; however, no statistical analysis of learning with control and experimental classes was performed. Some empirical studies do exist, such as those reported by Lucas, Postma, and Thompson. Their 1975 article on gaming reported a comparative study of retention when comparing traditional lecture-discussion with simulation-gaming. The authors looked at cognitive achievement – the retention of facts, concepts, and principles, in a history class. In addition to testing immediately after coverage of materials in both the control classes and the experimental method classes, another post-test was conducted ten weeks later as a delayed-interval measure of the students' cognitive retention. The researchers found that the experimental groups scored significantly better, in all teachers' experimental groups. Massey, Brown, and Johnson reported on exam performance as a means of measuring effectiveness of the gaming, in addition to questionnaire feedback from students (2005).

Much has been written regarding the use of games as teaching tools to help students at all levels gain an understanding of and reinforce understanding of knowledge and concepts related to many different disciplines. The "Normalization Shootout" game designed by the authors offers yet another interactive teaching technique for instructors. Results reported below contribute further evidence of successful use of games as teaching tools.

The "Normalization Shootout": A Single Elimination Tournament with a Culminating Challenge Round

Prior to playing the "Normalization Shootout," normalization concepts such as functional dependencies, closures, and keys are addressed in lecture, and students have opportunities to study many examples. Once those concepts are addressed, students receive reinforcement by playing the "Normalization Shootout." Students are matched against each other and challenged to answer questions focused on normalization concepts faster than a classmate against whom they are competing. Winners advance to a subsequent round in a single-elimination tournament-style series of matches. As extra incentive to students to strive for correct responses and to win the round, the instructors award bonus points to those who advance to another round, although an instructor could choose not to give bonus points.

How the Game is Structured

Each match contains five multiple-choice questions, and to win the match a student must answer three of the five faster than his/her opponent. The instructors use PowerPoint to project the questions. To reflect a "shootout" game, five basketball hoops are set up in front of answer choices A, B, C, D, and E. Students are positioned near the hoops and shoot a child-sized basketball into a hoop which represents their answer for the question at hand. (Suction balls, nerf balls, or sponge balls could be substituted for the children's basketball and hoops the authors use in their version of the game.) Once the first student to shoot makes a shot to a hoop that is deemed an incorrect answer, the first shooter must wait a reasonable time for his/her opponent to shoot a hoop before being allowed a second shot. This procedure is used to eliminate a quick shooter who is simply guessing as to the correct answer.

Progression of Concepts

Figure 1 illustrates how the rounds are structured. The first round emphasizes concepts including closure, key and highest normal form. The second round includes progressively different concepts. The challenge round concludes the tournament.

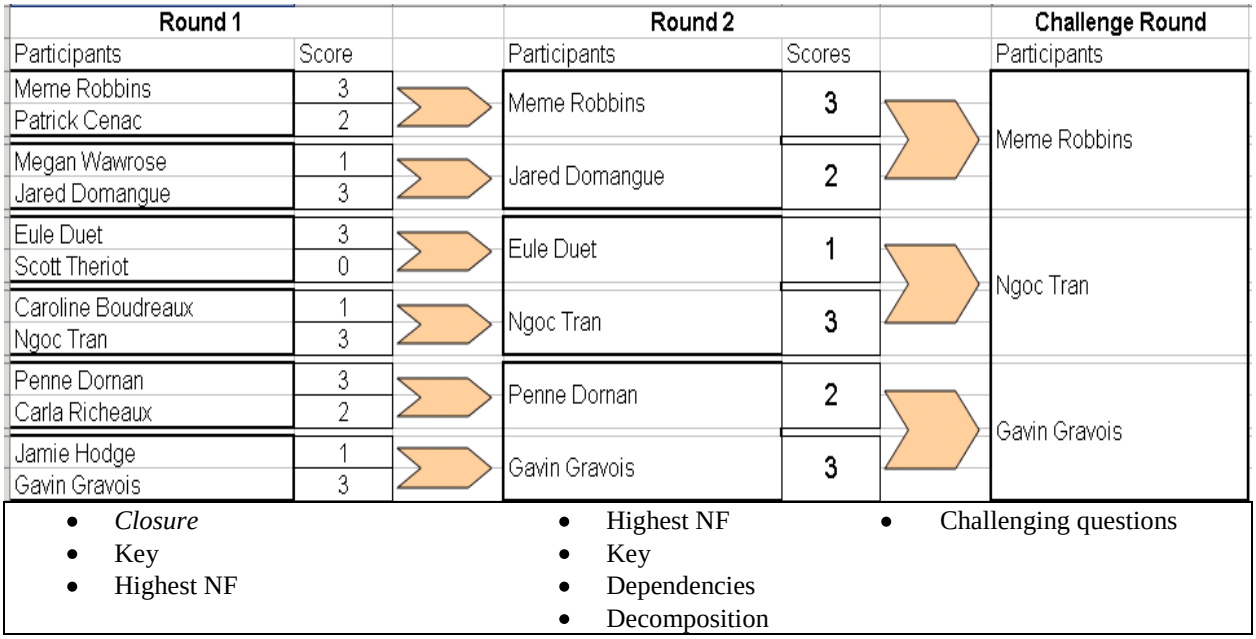
Round One: Questions related to identifying closures (3 questions), keys (1 question), and the highest normal form (1 question) are included in each of the first-round matches. The sequence is progressively more challenging because closure is used to define a key, and keys are used to define normal forms.

Round Two: Questions in this round increase in difficulty. Of the five questions in a match in this round, four relate to the identification of the highest normal form and key; the fifth question of the round relates to an identification of a valid decomposition.

Additional Rounds: Depending on the number of students in the class, additional rounds can be added to narrow the remaining competitors to two or three students. If time restrictions are necessary, an instructor can elect to declare these final two or three students as winners of the shootout. If time permits, however, these two or three students can move on to a final challenge round.

Challenge Round: According to Smith, (2002), an effective way to apply the principles of effective active learning is to have students explain something learned to someone else, because the student can "rehearse" the material and also receive immediate, valuable feedback. Thus, in the challenge round, each remaining participant receives a set of three more challenging normalization questions. Each participant presents his/her answers to the class, while other challenge round competitors are sequestered in another room. If the instructor is awarding bonus points for those who progress in the game, correctly explaining how the answers were determined earns the student additional bonus points.

Figure 1
Graphic Rendition of the Single Elimination Tournament



Is the Game an Effective Learning Tool?

Based on evidence gathered through four years' analysis of test scores and student feedback on questionnaires, students participating in the shootout have a firmer grasp of normalization—its foundations and definitions—as well as a better ability to apply the concepts to actual database problems. Students also help teach concepts to others in the class.

Normalization Concepts

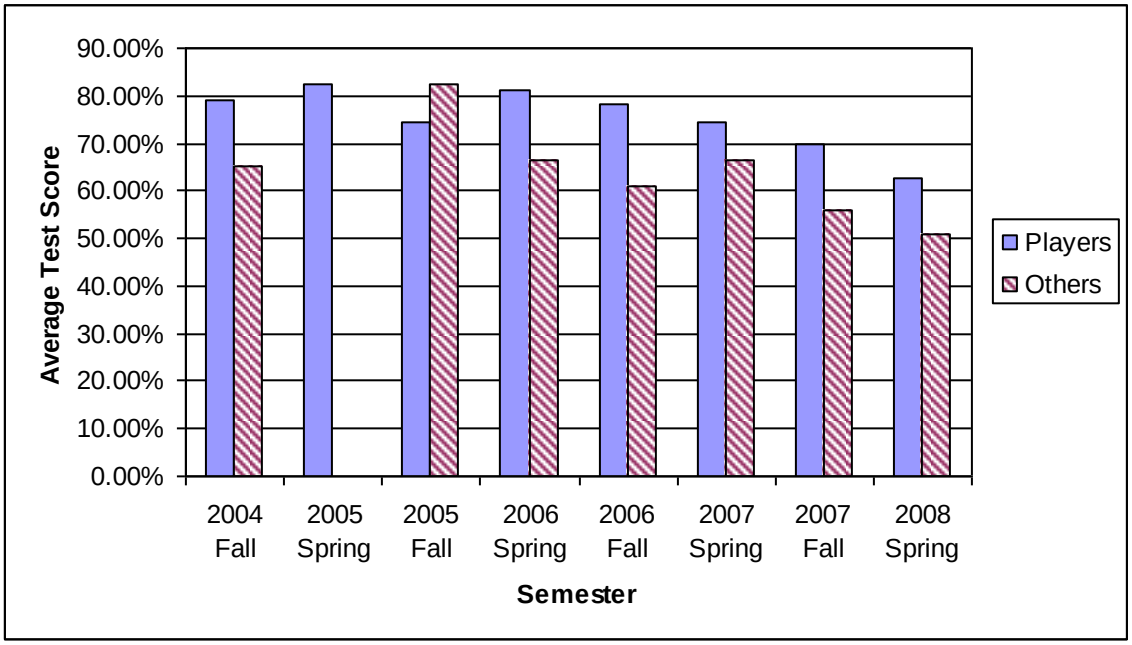
The "Normalization Shootout" has been used since the fall 2004 semester, and the authors have found it to be an effective teaching tool. Figure 2 illustrates a comparison of database design test scores for students by level of participation in the normalization shootout game. The graph illustrates higher average scores for those who played versus those who did not play. The authors also analyzed the percentage difference in end-of-semester retake scores for students completing the course. Findings show that those who advanced to subsequent rounds in the normalization shootout game earned higher scores, especially in the area of identification of the key (see Figure 3). As additional anecdotal evidence, a fellow faculty member observing the game noted that those students not involved in the immediate round being played were studying the board intently and mentally quizzing themselves on each question in preparation for the actual match in which they would participate.

The comparison of test scores and analysis in retake scores addresses one of the criticisms of educational gaming identified by Wideman, Owston, Brown, Kushniruk, Ho, and Pitts (2007), who criticize the limitations of much game effectiveness reporting as it relies too heavily on unreliable student and teacher self-reports. Williamson

(2007), in a viewpoints article, noted that researchers have rarely analyzed in depth the practical or pedagogical results of using games.

Figure 2

Comparison of Database Design Test Scores for Students
by Level of Participation in Normalization Shootout Game



Challenge Round - Students as Teachers

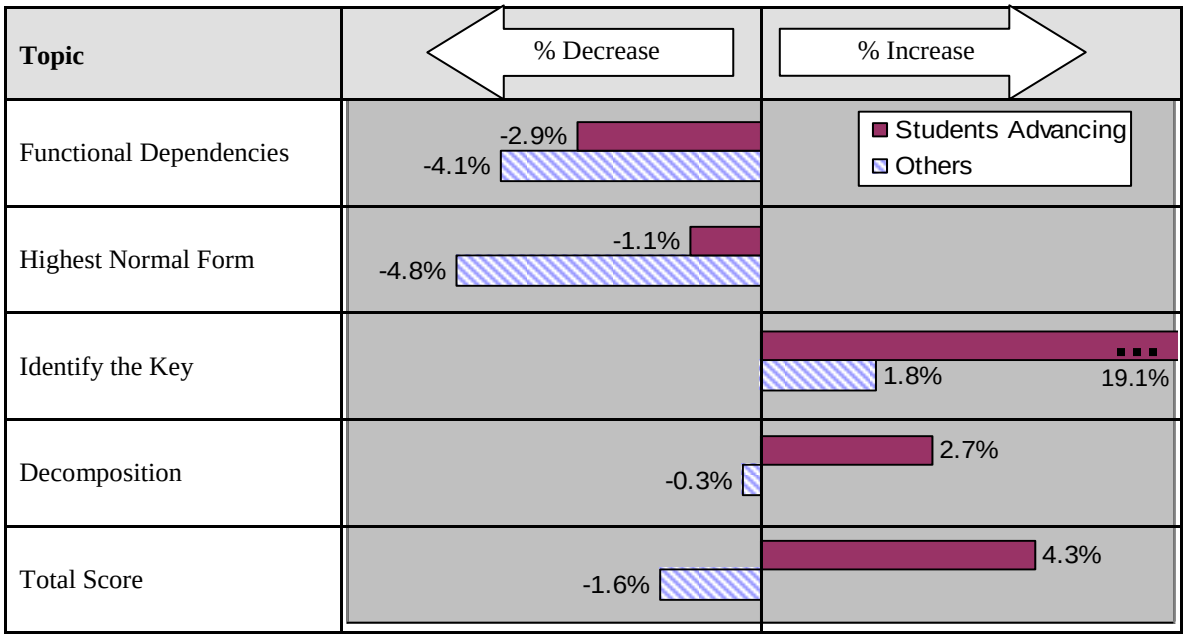
During the challenge round, students explain their answers to more difficult problems to the class; this allows the remaining students in the class to gain insight from those who have demonstrated more knowledge about normalization. Sometimes hearing it explained from the student's point of view helps other students grasp a concept.

Student Feedback

Each semester students complete a survey, sharing their opinions of the "Normalization Shootout." Table 1 illustrates the combined scores of eight semesters of survey data. Students indicated a high level of agreement that they enjoyed the game, studied for the game, would study for the game if the class played it again, found the game helped them to understand normalization concepts, and thought it was an effective use of class time. Few basketball "shooting" problems were identified. While the graph illustrates the combined scores of all eight semesters' data, the scores have been noticeably consistent for each of the questions in each of the semesters the game has been used in the classroom.

Figure 3

Percentage Difference in Retake Scores for Normalization Examination for Students Completing Course Fall 2004 - Spring 2008



Instructor Benefits

Salemi (2002) noted that teachers can also benefit from the feedback that occurs during active learning. No longer does the instructor have to wait until exam time to determine how well students understood. With each competition, the instructor can assess whether particular students are grasping the material or not, and even work in time to provide immediate clarification, more explanation, etc., before proceeding to the next round questions. By providing variation from lecture, the instructor can reach more students than by using lectures exclusively, thus building on Kolb's (1984) research related to different learning styles and the need for different teaching techniques to reach students with different learning styles.

Teaching Tips

Kiili (2007) noted that a reflection phase of an active learning game is important. Careful questioning and explanations by instructors, with sufficient time for student reflection, can help accomplish this. For those instructors who may wish to replicate the "Normalization Shootout" or implement a modification of the game, the authors offer some teaching tips that will help ensure successful implementation of the game.

- Develop questions carefully and review them thoroughly before including them in the game. Poor question design can confuse students and deter learning.
- Be sure questions are carefully linked to course and learning objectives.
- Talk about the game in classes prior to game day.
- Exhibit enthusiasm throughout the game; if the instructor is not enthusiastic, he/she cannot expect students to be enthusiastic.
- Play the game at a tempo that allows the instructor to assess student responses to each question of each round.
- Take the time to re-teach any concept as necessary because students appear to not understand.
- Analyze the student learning in a way that lets the instructor confirm the actual contribution to learning.

- Seek student feedback about the game. While student learning styles differ and each class is different from another class, if students do not perceive value in the game, this can signal that revisions are needed in game structure, question design, etc.

Table 1
Students Opinions Regarding Game Average Responses ± Standard Deviation
(Combined Responses from 8 Semesters)

Identify your level of agreement with each of the following statements by checking the appropriate box to the right of the statement.	**Strongly Agree**	**Agree**	**No Opinion**	**Disagree**	**Strongly Disagree**
I enjoyed the Normalization Shootout game.					
I studied the normalization concepts covered in class to prepare for the game.					
Having participated in this game, I would spend more time studying in preparation for another similar game.					
I believe that playing the game helped me to understand the normalization concepts better.					
When considering the use of class time, I believe that playing the game is more effective than going over similar types of homework problems.					
I knew the normalization concepts well, but I believe that I did not score well in the game because of aiming and shooting problems.					

Conclusion

As many authors have previously studied and reported, games can be effective learning tools if designed carefully. The "Normalization Shootout" used in the authors' database classes assists students in mastering difficult concepts. The game also contributes to retention of that knowledge and enhances understanding of the material. Students are also able to learn from other students during the challenge round. Students are engaged in the class, and broad participation is achieved. Both the students' testing scores and survey feedback indicate positive outcomes. The "Normalization Shootout" is an effective tool that others may also find useful in their classrooms. A creative teacher could use a comparable game to teach concepts in another information systems content area or in courses within other disciplines, such as management, marketing, finance, accounting, or economics.

As noted by Salemi (2002), there are costs involved with active learning such as the Normalization Shootout. More time must be invested in teaching a concept, thus fewer topics may be covered in the entirety of the course. While some learners will benefit from the "Normalization Shootout," this type of activity will not be the best strategy for all learners. The instructor must be willing to devote the time necessary to providing sufficient good questions for the entire game. "Sloppy" question writing for the game will potentially confuse students.

From the perspective of the instructors and the students, is the "Normalization Shootout" fun? The answer is, "yes," and just like Salami (2002), the instructors think the benefits outweigh the costs.

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Live Chat in eCommerce:
The Importance of Interpersonal Communication Skills

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Abstract

This paper traces the growth of live chat and examines its advantages for online retailers. Next it lists the most common complaints and shortcomings of the live chat function. Implications for teaching interpersonal communication, marketing, customer relations management, and similar courses are explored. Finally, a case study is presented for use in the business classroom.

Keywords: online retailing, live chat, Internet marketing, business case, business communication

Introduction

The emergence of online shopping as a retail phenomenon is undisputed. One feature that helps make the online shopping experience closer to the traditional bricks-and-mortar experience is live chat. A Web site's live chat feature represents a sales person who can provide assistance, direction, encouragement, and support for the shopper. The interaction between the shopper and the sales assistant is synchronous and text-based. Leigh Duncan, of KPMG Consulting, calls live chat "revolutionary" because it brings the cost of customer service down significantly and puts the retail sales rep in the home with customers while they are shopping" (Findlay, 2002).

This paper traces the growth of live chat and examines its advantages for online retailers. Next it lists the most common complaints and shortcomings of the live chat function. Implications for teaching interpersonal communication, marketing, customer relations management, and similar courses are explored. Finally, a case study is presented for use in the business communication classroom.

Benefits of Live Chat for Online Retailers

Live chat is an exploding technology that brings the Web-shopping experience closer to the real-world. Retail sites have adopted the feature because it is a low-cost, simple way of communicating with customers. LivePerson, Inc., a leading provider of the software and support headquartered in New York City, has more than 4,000 client companies, including EarthLink, Hewlett-Packard, Microsoft, Verizon, Neiman Marcus, QVC, New Line Cinema, Charles Schwab, Qwest, and Sony. Their revenue for 2006 is projected to be over $32 million, and they are experiencing quarterly revenue increases of some 40 percent from the previous year (Internet Retailer, 2006).

The hosted software enables companies to identify and engage online shoppers, thereby increasing sales. Reports indicate that the greatest advantage of this feature is that it increases the "conversion rate," or the likelihood that a shopper will actually buy a product. Shoe company K-Swiss, Inc., for example, reports more than double the average conversion rate when customers use live chat, since 75 percent of chats are directly related to product knowledge (Findlay, 2002). Live chat also allows cross-selling and up-selling. It lowers shopping cart abandonment and increases the customer's confidence to complete a purchase. According to an Andersen Consulting poll, almost 62 percent of Internet consumers said they would purchase more products online if live customer support were available (Volusion, 2006).

Second, live chat does not require a huge technology investment. Vendors and analysts say the cost of implementing live chat on a commercial site is low. Generally, the application can be downloaded onto a retailer's server in under an hour. Customer service representatives merely need browsers on their computers.

Third, live chat costs less than customer service phone calls and emails. ServiceReps.com Inc., another major provider, offers these comparisons: depending on wait time, it can cost $15 to $35 to handle phone calls. Emails can cost $7 to $13, with that price affected in part by the fact that reps deal with emails serially rather than simultaneously. Live chats cost about $2 per transaction. Part of the cost analysis considers the length of time it

takes to resolve customer questions. Emails can take up to three days, while phone and chat questions are resolved immediately (Findlay, 2002).

Fourth, text chat is growing in consumer acceptance. Many shoppers use instant messaging and text messaging for personal and professional communication. Live chat on retail Web sites is merely an extension. The instant results make it superior to going offline to call the customer service center or waiting for an email response to the customer's question. Sixty-three percent of U.S. online consumers reported that they had used live chat in 2005, an increase of 22 percent from 2001. In addition, 58 percent of those using live chat in 2005 said they were satisfied with the results, up 13 percent from 2001 (Internet retailer, 2006).

Retailers can improve the return on investment (ROI) of live chat by limiting its availability to certain situations, according to a new JupiterResearch report. One model, *reactive chat*, uses the feature only for complex issues and for troubleshooting. A second model, *proactive chat*, uses pop-up chat requests or chat buttons only at critical phases, such as after products have sat in shopping carts for a length of time. A third model, *automated chat*, uses live agents only to answer inquiries that automation cannot handle, reducing service costs by some 80 percent (Internet retailer, 2006).

Drawbacks of Live Chat for Online Retailers

Andrews and Haworth (2002) observed that there is little empirical evidence demonstrating the value of live chat for eCommerce. They conducted a usability study of five eCommerce Web sites that offer live chat in order to evaluate customers' actual satisfaction level and purchase behavior. Their results confirm that a positive chat experience increases purchase rate. However, they identified both technical and sociability issues that are relevant to live chat's effectiveness.

Technical issues include consumer access to the chat function. That is, a shopper with a question who must search for the link/icon may become frustrated and abandon the Web site. In addition, shoppers expect to interact with an actual person during the chat and are disappointed with canned responses or inattentive interaction (Andrews & Haworth, 2002). The software can be complex, difficult to properly install and manage (Hodge, 2000). It can be poorly designed (Puente, 2000) or unable to handle complex problems (Bannan, 2000).

Sociability issues are housed in the actual interactions between a shopper and a customer service representative. Andrews and Haworth (2002) identified five specific problems with sociability:

- Asking for personal information that shoppers did not consider relevant
- Missing privacy statements
- Referring shoppers to a Web page instead of answering the shopper's question directly
- Impersonal, generic, cryptic or canned responses
- Lack of politeness and etiquette, including typos, sentence fragments, using all capital letters, not saying "please" and "thank you"

Implications for Teaching Business Courses

From the retailers' perspective, live chat's efficiency is paramount. Service representatives must be able to handle multiple chats at one time. Call center representatives are trained for typing speed, grammar and spelling skills, and overall quality of written skills. Pre-formatted answers are often used to make the chat move faster.

From the shoppers' perspective, however, such efficiency factors may detract from the live chat experience. A poorly worded response negatively affects shoppers' opinions of the chat, even if the shopper receives the information they need (Andrews & Haworth, 2002). Shoppers want to connect with the service representative and have personal conversations, sometimes about irrelevant topics such as where the representative is located. Clearly, consumers expect live chat to mirror face-to-face communication as much as possible (Reynolds & Arnold, 2000). Personalized chats can be important determinants of perceived service quality, satisfaction, and purchase behavior.

In the classroom, business communication principles can be applied to live chat as an example of contemporary practice. Teachers can demonstrate the important role that verbal and visual cues play in customer service and buyer behavior. Live chat experiences clearly show how interpersonal communication leads to interpersonal relationships, which lead to trust, which leads to purchase. For instance, when asked directly for their reasons for buying at a Web site after experiencing live chat, shoppers consistently stated five reasons for a positive buying intention:

1. overall positive experience with the Web site, including the chat
2. trust in the retailer

3. confidence in the products
4. price acceptability
5. low risk of purchase (Andrews & Haworth, 2002)

Trust, or reputation, is related to communication in concrete ways. When technical problems occur during eCommerce, trust may keep the customer pursuing a purchase rather than abandoning the effort. Conversely, poor technical performance or a poor live chat experience appears to drive away new online customers.

Live Chat Case

The following actual chat and telephone support transcripts dated August 12-19, 2006 are offered for study in business communication courses. Actual Web sites and hosting sites have been disguised. Characters' names have been changed. Discussion questions are designed to help students understand the importance of verbal and visual cues when interacting with online customers.

Scenario

Laura has just established an account with a website hosting company for her new website. In an attempt to set up a domain name, she has encountered difficulties. She decides to access customer support through the chat function.

Transcript of Online Live Chats and Telephone Call to Customer Service

August 12 – Live Chat Session Initiating Tech Support Question:
Laura: I opened a "lite" account just now. It would not let me set up a domain name. I want to use "www.laurasconfections.com". How do I get the domain name and use it with the "lite" account I just set up?
**You are now speaking with Amit. **
Amit: Hello and welcome to Online Technical support. I am here to assist you with your issue.
Amit: Please to let me to know the username to check.
Laura: The username is "laura01."
Time lapse: 11 minutes
Laura: Still there?
Amit: Yes, I am for checking your issue.
Amit: Please to allow me some time.
Amit: Sorry for to keep you wait.
Amit: This issue needs attention from our senior technicians. I will create a trouble ticket on behalf of you.
Amit: My senior technicians will look into this and get you with the details.
Amit: Is there anything else I can assist you with?
Laura: How does the site manager work? When I finished setting up the "lite" account, I was pointed to a site called site manager, I guess where my account is managed. How do I get to it and manage my account?
Time lapse: 12 minutes
Amit: You can login into your control panel through the following URL http://cp.relingo1423.com
Amit: Also please refer the following tutorial for the site manager control panel
Amit: http://www.relingo1423.com/HSdocumentation/user/index.html
Laura: How will your senior technicians contact me?
Time lapse: 5 minutes
Amit: They will get you back within few hours.
Laura: HOW?
Amit: I am sorry, they will get you back at your registered email address
Laura: Is there a telephone number for tech support for relingo1423.com?
Time lapse: 9 minutes
Amit: I have already escalated your issue to our senior technicians, they will get you back within few hours via email.
Laura: Is there a telephone number for tech support for relingo1423.com?
Time lapse: 5 minutes
Amit: Yes, you can contact them at 800-555-1000
Laura: Thank you, I will wait for the email.
Amit: You are welcome.
Amit: Thank you for using the online support. Our chat session will now be closed.
Time lapse: 3 days

August 15 – Telephone Call to Customer Service:
After three unsuccessful attempts to penetrate the automated multi-level support menu, Laura became very frustrated. She finally found a combination of unlikely selections to be transferred to a support technician. After 9 minutes on hold:
Laura: I need technical assistance, please.
Mary: Hello my name is Mary. Welcome to our technical support service. I am here to assist you with your issue. Can I please have your username, domain name and PIN?
(Laura responds)
Mary: Please let me to know how can I assist you?
Laura: Yes- I have tried to use the online chat to resolve my inoperable domain name. I got one year of "web lite" hosting. During the setup, I tried to register a domain name and the registration failed. I went into my control panel to register a domain name. Relingo1423.com charged me $149 for ten years of registration but has not registered my domain name, www.laurasconfections.com. I have been charged, and I want it taken care of. I have waited three days for your senior technicians to communicate with me via email. I'm tired of waiting.
Mary: Please hold for a few moments for to allow me to look into your issue.
Time lapse: 5 minutes
Mary: Please hold for a few more moments for to allow me to look into your issue.
Time lapse: 5 minutes
Mary: I have relayed your concerns to our senior technicians and they will contact you.
Laura: Please don't tell me that someone will look into it and contact me. The chat support told me that before, and nobody ever contacted me, OR resolved the issue.
Mary: Would you mind holding, please? I need to check something.
Laura: OK
Time lapse: 17 minutes
Mary: Please hold for a few moments, I am checking your issue.
Time lapse: 11 minutes
Mary: I have relayed your concerns to our Concern Department. They will contact you at your registered email address soon.
Laura: Is there a supervisor I could talk to? You just keep putting me on hold and then saying the same thing as before. This is not helping. Please get me a supervisor.
Mary: Hold for a moment, please.
Time lapse: 19 minutes
Mary: I have spoken to our supervisors and they have escalated your concerns to our Concerns Department. Is there anything else I can assist you with?
Laura: Forget it. I'll try the chat support again.
Mary: The Concerns Department will take care of your issue and get back to you via email. The ticket # for your issue is TQM-764239. Goodbye.
Time lapse: 3 days
August 18 – Live Chat Session Initiating Tech Support Question:
Laura: I need technical assistance, please.
** You are now speaking with Amit. **
Amit: Hello and welcome to Online Technical support. I am here to assist you with your issue
Amit: Please let me to know how can I assist you?
Laura: Hello. I chatted with you several days ago about my inoperable domain name. I got one year of "web lite" hosting. I tried to register a domain name during the opening of the account and it failed. I went into my control panel to register a domain name. Relingo1423.com took my $149 for ten years of registration but has not registered my domain name, www.laurasconfections.com.
Amit: Please to allow me moments to look inty your issue.
Laura: Please don't tell me that someone will look into it and contact me. You told me that before, and nobody ever contacted me, OR resolved the issue. I also tried the phone support, and they were even less helpful and wasted even more of my time.
Amit: Would you mind holding for a moment, please? I need to look into this a little further.
Laura: OK
Time lapse: 14 minutes
Laura: Still there?
Amit: Yes, I am checking your issue.

Time lapse: 11 minutes
Amit: Thank you for your patience and cooperation.
Amit: We have checked and it says it could not charge.
Amit: Does it charged to your credit card?
Amit: Do you have details about the charge?
Laura: I have a receipt via email that $149 was charged to my credit card. The domain, however, has not been registered. I want it registered, especially since I have already been charged for ten years of domain registration.
Laura: Here is the email transcript. (email receipt hidden)
Amit: Thank you for the details
Time lapse: 19 minutes
Amit: laura01, we will verify the charges details from the Billing Department and then we'll be happy to submit her 10 year registration right away.
Laura: Will internet users then be directed to my "web lite" website?
Laura: When they go to www.laurasconfections.com?
Amit: The concern department will take care of your issue and get back to you via email.
Amit: The ticket # for your issue is QIS-787745
Laura: Nobody ever got back to me via email the last time you said they would.
Time lapse: 10 minutes
Amit: laura01, I have discuss your issue with our senior technicians and we have already escalated your issue to the Billing Department for verification purpose.
Laura: How long does verification take?
Time lapse: 7 minutes
Amit: Once the charge verified from billing then we'll be happy to submit her 10 year registration
Amit: I am sorry and do apolijize but right now I do not have the ETA for this issue.
Amit: Is there anything else I can assist you with?
Laura: I just want what I have been charged for to be carried out by relingo1423.com.
Amit: Yes, I understand your concerns about this issue. I will try my best to help you resolve it.
Laura: Thank you. I will wait until tomorrow to pursue this further, if necessary.
Amit: Yes, our concern department will get back to you as quick as possible.
Amit: Is there anything else I can assist you with?
Laura: One more question- I have created a file in my "web lite" named "index.html" is this the page that will open when people go to www.laurasconfections.com?
Time lapse: 6 minutes
Amit: Yes, the "index.html" is the default page, so when people visit your site they will get the index.html as your default page.
Laura: I hope we will be up and running tonight. Do you think that is possible?
Time lapse: 4 minutes
Amit: I am sorry and do apologize but right now I do not have any ETA for this but our techs will resolve your issue and get back to you with the details as quick as possible.
Laura: Thank you.
Amit: You are welcome.
Amit: Thank you for using the online support. Our chat session will now be closed.
Amit: Good Bye.
Time lapse: 2 days
August 20 - Today:
Two days have now passed and no email communication has come from relingo1423.com except for another "statement" that the account has no balance, and therefore nothing further had been charged to Laura's credit card.

Teaching Note

Title
Communication Dysfunction: How to Alienate Customers

Description
This case consists of an actual live chat and telephone conversation with support staff that took place over 18 days in August 2006. Names, websites and hosting sites have been changed. The transcripts of the live chat and

the phone interaction can be used to help management, marketing, and business communication students understand the importance of verbal and visual cues when assisting online customers.

Synopsis

Laura owns a catering business, Laura's Confections. She has just designed a Web site for her business and is establishing an account with a Web site hosting company. In an attempt to set up a domain name, she has encountered difficulties. She used the live chat function on the hosting site to access customer support. The transcript of interactions between Laura and the online tech support person via live chat reveals a number of key customer relations issues. Similarly, the transcript of interactions between Laura and the webhosting company's customer service department via telephone demonstrates several important issues. The case concludes with Laura's Web site finally up. During the process, she has experienced serious frustration, spending more than ten hours trying to work with the hosting company. Since there is no structure in place to quit the service, she is locked in for at least a year, though her domain name can be hosted anywhere. Laura is determined to switch webhosting companies as soon as possible.

Suggested Teaching Approaches

This case is appropriate for use in business communication, management, or marketing courses. The major point of the case is that sophisticated technical processes are rendered ineffective when support cannot seem to take care of simple requests from customers. The situation is exacerbated when problems occur with the automated processes, as in this case. It is further aggravated when the so-called "support" consists of placing customer support requests in a queue, convenient for understaffed support divisions but very frustrating for customers who have paid for services that are not being delivered. In recent years, the technical processes and automation have far outdistanced the idea of true customer service.

This case highlights a web hosting service that has tried to distance itself from customers, setting up email, chat, and phone "support" that serves no other purpose than to create trouble tickets to be placed in queue for processing by technicians. The objective seems obvious- if the firm can minimize service staff, it can make more profit. To make matters worse, the chat and phone clerks are asking how else they can assist the customer without having assisted them with what they have already asked.

In marketing and management courses we suggest using this case in conjunction with lecture focusing on real services versus perceived services. At the very least, the case highlights ineffective communication. More important, the case shows the frustration that results when customers are seeking solutions but instead of solving problems, the "support" team simply distributes pacifiers- assurances that someone will deal with their issue soon- instead of really serving customer needs.

In business communication courses, this case can be inserted in several possible areas. It can be used to demonstrate the application of important principles such as audience awareness and media sensitivity. Students who examine the transcripts will be able to point out places where these principles have been violated. Class discussion may help students see the business consequences of violating these principles.

Additionally, this case demonstrates the value of revising and editing during the writing process. Students will readily be able to point out examples of errors in grammar, usage, and mechanics in the transcripts. Discussion of the impact of such errors on customer relations and on clarity of meaning will help convince students of the importance of editing their documents.

The telephone transcript can also be used in lessons on listening, nonverbal communication (especially vocalics), and phone skills. It dramatically demonstrates the impact of poor CRS responses on customers' impressions. One application of the case is to assign students to the roles of Mary and Laura and to have the students read the transcripts aloud. Students would be asked to comment on the speakers' delivery style and clarity of meaning, and the importance of verbal "attends" during long phone silences.

Since today's students are media savvy, they are likely to be comfortable with technological innovations such as the live chat function at online retail sites. The instructor might use this case as an introduction to the concept of technological communication in business. A key question is, to what extent can technology stand in for human interaction. This case shows that live chat is not equivalent to a retail store clerk, though it is designed to be. In summary, the case provides a rich catalyst for initiating discussion, even in lower-level business communication courses.

Expected Learning Outcomes

- Awareness of importance of timing, responsiveness to customers
- Importance of correct written and oral expression
- Importance of communicative competence
- Elements of customer service
- Impact of customer dissatisfaction due to weaknesses in interface (chat, helpline) on business success

Case Questions & Answers about the Company's Customer Support System

1. *What is the function of the Online Technical Support Chat feature?*
   The online chat function is supposed to provide real time tech support for customer issues.
2. *What is the function of the telephone support/help line?*
   The function of the telephone support/help line is typically to provide automated support for frequently asked questions with back up real time support from customer service reps. In reality it seems to be used as a way to placate customers and make them feel that their issue is being dealt with, when it is not even being addressed. It is a middleman used to move complaints through the system.
3. *What is the function of the Concerns Department?*
   The concerns department supposedly handles issues that can't be resolved by the online chat or phone customer service. But who knows for sure?
4. *How do these three support features interact?*
   They interact to stall and gain more time. They are supposed to interact to make it very convenient for the customer to get help.

   Laura first seeks help through the online chat. He gives her the number to the telephone support line. She calls the line and this person is not very helpful either. The help lady tells Laura she will send the issue to the Concerns Department. Laura chats online again and the help person also says he will send her issue to the Concerns Department. The online and telephone features both try to help Laura. They both send the issue to the Concerns Department, but Laura never receives any feedback.
5. *When does it seem that a query become "escalated to High Priority"? How does a Trouble Ticket help solve a technical problem?*
   A ticket was never escalated to "high priority." The ticket was escalated first to senior technicians, then the concerns department, then the accounting department, back to the concerns department. A trouble ticket in this case seemed more for getting the customers out of the communications channels rather than helping.
6. *How does the Billing Department interact with the Online Tech Support Chat feature?*
   Here, the billing department was obviously disconnected from tech support. It seems that communication does not seem to take place by any timely means such as computer programs. The billing department should provide some sort of access (read only) to tech support to verify valid customers.
7. *Where do you see communication breakdowns among these three customer support features?*
   It seems as if the customer support features are run by people who don't speak English and don't know the product they are supposed to support. The huge time lapses as they search for answers and the repeated pre-programmed responses show that they do not understand her problem. Also, once she had spoken to Amit she had to re-explain her problem to Mary, which shows that they didn't keep the problem to access.

   <u>Chat Session</u>
   - language barrier, misspelled words and poor sentence structure
   - wrong questions answered
   - no feedback, none during time lapses and none after conversations
   - may respond to a message but another one has been sent, so looks out of order

   <u>Phone</u>
   - too many automated responses
   - lapses too long
   - no feedback
8. *As a business communication consultant, what would you recommend to this website hosting company to improve its customer support system?*
   The first thing is to provide more training to the staff so that they can answer basic questions. The chat session is full of time lapses due to the employee putting the customer on hold. Plus, hire technical support in an English speaking country. The dialog exchange is riddled with choppy English. This may create unintentional miscommunication. Additionally, there is no plan for what to do once someone calls in. This

may relate to the training issue, but it seems as if the person answering the phone or on the other end of the chat is just listening without providing any actions.

Always have a supervisor or a support technician talk to the customers directly if they have been calling for support more than one time. Also have a better call system where every message can direct to the right persons in charge.

Case Questions & Answers about the Live Chat

1. *To what extent does Laura feel that Amit is personally attending to her needs? How do you know?*
   She is not confident that Amit is personally attending to her needs. She feels that he keeps passing her issue off to different departments. She says this at the beginning of her second chat. "Please don't tell me someone will look into it and contact me." However it does appear she trusts him more than Mary, mainly because she chose to try the chat again, and by the number of questions she asked him.

   She does not feel he is responding well. She repeatedly asks him if he is still there during their chats and has to ask for clarification. The time lapses are numerous and excessively long. Laura also tells him that she has not received any follow-up and sounds frustrated with his automated responses.
2. *Which of Amit's responses appear canned, irrelevant, and automatic rather than personal?*
   "I have sent your concerns to senior technicians and they will contact you."
   "We have established your issue" and "You will get an email."
   "This issue needs attention from our senior technicians. I will create a trouble ticket on behalf of you."
   "Thank you for using the online support. Our chat session will now be closed." And "Thank you for your patience and cooperation."

   Also every time Amit said "her" instead of saying "you" or "your" was very impersonal. When he kept saying "they are looking into it" that was not relevant to her.
3. *Find examples of typos, grammatical errors, and word choice errors in Amit's responses. What are the potential effects of these on customer satisfaction? On Laura's comprehension of Amit's messages? On the overall effectiveness of the chat?*

   There are several word usage errors "please to allow me some time" or "sorry for to keep you wait," "Does it charged to your credit card?", and "Please to allow me moments to look inty your issue." These errors immediately disrupt confidence in the program. As a disgruntled customer, the frustration is compounded right at the beginning when Amit says "please to allow me …." Or even before that "please to let me know …." Most likely the dysfunction is not detrimental to the point of termination. Laura most likely understands the intent of the message but is nevertheless frustrated. Therefore, Laura's chat was completely ineffective as evidenced by repeated chats and phone calls to customer service. This is further evidenced by Laura's eventual decision to cancel service.

   Other examples:
   a. I will create a ticket on behalf of you
   b. And get you with the details
   c. They will get you back within a few hours
   d. I have already escalated your issue

   These typos, grammatical errors, and word choice errors can have a detrimental effect on customer service. How can Laura be assured that her issue is being handled correctly when Amit's having a hard time communicating with her? Laura has to try to decipher what Amit is writing and make sense of it. Amit is obviously having a hard time with the communication because he is taking a long time to answer and his communication is riddled with errors.
4. *Rate the effectiveness of Amit's politeness, especially his/her use of "please" and "thank you" in messages.*
   The politeness seems very canned. These phrases are used too frequently to be considered sincere.

   Amit's politeness provided a buffer. Laura contained her frustration enough to keep persisting in an effort to find a resolution. She kept on calling to get her problem resolved. Her persistence was evident; she was able to speak to someone regardless if he had the correct answers.
   - she keeps her cool
   - comfortable enough to call back
   - friendly service, allowed her to rethink cancellation before resolving the issue
   - gave the impression of concern
   - patience

It was as if the responses were pre-written and he/she just inserted one into the slot for response. Politeness is important but put-on politeness is taken as rudeness. By the second chat that is what it appeared to be.

5. *As a business communication consultant, what would you recommend to this website hosting company to improve the live chat feature?*
   This company should restructure the "live chat" so that it is more prompt and less delayed. We can assume that one Rep is helping multiple customers at one time. Also, the Reps may need to be able to access the different departments to follow through with customer problems.

   The company should reduce the time it takes to provide help and support. Have someone who speaks clearly to help and assist. This might make customers more comfortable. Reduce the number of times they place someone on "hold" or the dead time. Follow up with some type of response, even if it is to say you are currently working on the issue.

Epilogue

Laura spent more than ten hours over two weeks trying to rectify the situation. She finally succeeded in getting her business's website up, working through the company's ridiculously complex system. The web hosting company never followed up with a satisfaction survey or request for customer feedback.

The automatic payments schedule was set up efficiently and immediately, but the corresponding web service was a nightmare to force through. Only the customer's determination and perseverance accomplished the service she was paying for. There is no structure in place to request a refund or quit the service before the one year is up. Purchase of a domain name was for ten years, and it can be hosted anywhere. Laura plans to find another webhosting company before her agreement expires next year.

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Why Teach Internet-Based Distance Education?

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Abstract

This research was conducted to determine why two-year community college instructors teach over the Internet. By understanding why these instructors teach over the Internet, colleges can recruit more instructors to teach using the Web thus allowing colleges to offer more Internet courses. They can also use the information to keep the instructors who are currently teaching over the Internet satisfied, and motivate them to continue to teach. After the research, eight components were found using the factor analysis. The eight components in order are labeled: Technical and Computer Challenges, School Promotion, Student Preferences, Personal Benefits, Receiving Computerized Assistance, Growth and Knowledge, Textbook Company Assistance, and Pay.

Keywords: Distance education, instructor motivation, online learning, Hertzberg,

Introduction

The technology and the information explosion is a phenomenon that has driven the world in unexpected ways. “More Americans now assemble computers than cars and there are more Americans in the software industry than in the oil industry.” (Paine, 1996, p. 33) Fortunately, education responded to this challenge. “Education is a necessity and we’re increasingly turning to the information superhighway (the ‘Net’) as an interactive learning tool. It’s a new paradigm, impacting our business and industry partners, government, education and world in which we live.” (King, Koller and Eskow, 1996, p. 32) “One would be hard pressed to find a single professional, regardless of career field, going through an entire work day without touching any computer, PDA, was around other electronic device.” (Whitney, 2007, p. 1)

As our institutions of higher learning move into the distance-learning arena, and they find themselves teaching over the Internet, it will become more and more important to find out what motivates instructors to teach over the net. By the discovery and the understanding of these motivations, Universities and colleges can more effectively recruit qualified instructors to teach over the Web. This allows these institutions to offer a wider and more varied range of Internet courses. One of the main thrusts of such information will be to provide job contentment and motivation to instructors who are currently teaching over the Internet.

Purpose of Study

The purpose of this study was to discover what motivated business and technical instructors to use Internet-based instruction within two-year colleges and institutions. Specifically, this study was designed to determine the factors that actually motivated instructors to teach over the Internet.

Statement of the Problem

Although there was considerable information available about what and how courses are taught over the Internet, there was a lack of literature about the motivation of instructors teaching over the Internet. Administrators and educators could use the information about why instructors are teaching Internet courses. This information would help them make decisions about adding further online courses and attracting more instructors into teaching online and training of teachers to deliver via online.

Background Literature

In the eighties and nineties, researchers began to look at different motivation theories coming out of business research. James Medved (1982) studied 70 teachers with respect to Herzberg's motivation theories, and found that the factors that were important to teachers were those items that drew them into the profession in the first instance. Medved found that a sense of responsibility and accomplishment is very important for teachers. However, he also discovered that a "lack of recognition" (p.555) of their worth in society had a strong negative influence on their personal sense of self-worth. He reasoned that better pay and other forms of recognition were essential to increase their view of their own self-worth.

Theoretical Background

Every child in elementary school is familiar with the story of Abraham Lincoln studying late at night, by the light of a flickering candle, to obtain his education and become a lawyer. This is a lesson for us all in that if a person wants to succeed, he or she can do so if they are willing to do the work. The lesson is usually taught and emphasizes the need to work diligently and do homework, but it is also a lesson in the effectiveness of distance education. After radio and TV, Open Universities were the first widespread form of distance learning.

Open Universities

The first Open University, established in 1962 to serve a distance clientele, was the University of South Africa. However, the British Open University (the BOU), which was established in 1969, was certainly the most successful. It became a model for many other universities around the world.

According to Moore and Kearsley (2004), there are seven general principles which open universities follow:

1. Any person can enroll, regardless of previous education.
2. Students can begin a course at any time.
3. Course study is done at a home or anywhere a student chooses.
4. Course materials are developed by a team of experts.
5. Tutoring is provided by other specialists.
6. The enterprise is national in scope.
7. The enterprise enrolls large numbers and enjoys economies of scale. (p. 42-43).

Because these are just principles, many exceptions are made. For example, some universities have lower age limits, and some courses have prerequisites. Many universities including the BOU require that students participate in residential weeks on campus.

Another characteristic of open universities is the use of audio, visual and computer media to supplement print (Moore & Kearsley, 2004). The British Open University produces its courses in association with BBC television. In spite of the extensive use of audio, video, and now computer based media, the main vehicle to disseminate information is still print media, and most open universities spend a considerable amount of resources to ensure that the print material is well designed and pedagogically sound.

This pedagogically sound learning system is often termed open learning, and has been established as one of the clear educational trends of the last decade. Open learning includes many facets, but the primary one is that the learner has control and choice over what he/she wishes to learn. One definition which touches on many other facets of open learning is found in Johnson, 1990.

. . . an approach rather than a system of technique; it is based on the needs of individual learners, not the interests of the teacher of the institution; it gives students as much control as possible of what and when and where and how they learn; it commonly uses the delivery methods of distance education and the facilities of educational technology; [and] it changes the role of a teacher from a source of knowledge to a manager of learning and a facilitator. (p. 4).

There are several reasons to promote open learning. Many promote open learning to support the variety of different learning styles that different students have. (Marland, 1997). It allows learners to work toward their own goals, at their own speed, in a manner which works for them. Proponents believe that giving the student more responsibility and independence will empower students and increases the relevance, and consequently the strength of their own learning.

Another strength of open learning is from a cultural equity point of view. Organizations which promote an open structure seek to widen access to educational opportunities so that those with potential are not barred from

entry for reasons such as work conditions that prevent attendance at scheduled classes; remoteness from campus; physical disability; absence of formal credentials or a nontraditional educational background.

A third area which drives the increase of the open learning concept is a technologically uneducated workforce. The trends of the late eighties and nineties in the business world, with the quality concerns and corporate downsizing caused a considerable interest in the retraining and re-education of the workforce. (Marland, 1997). Since this training and education is going on in a continually changing environment, open learning provides a flexible and fast-paced alternative to traditional education.

Providers of learning services had to be responsive to the specific requirements of different organizations and differences among learners in respect of when and how long they could study, styles of learning, prior learning, pacing, need for learning support, suitable venues for learning, and certification requirements. (Marland, 1997, p. 70). Only open learning techniques would allow this learning to occur at the speed and depth required to accomplish an organization's goals. The learning techniques and the demands of employee training have given rise to several theoretical models used in distance learning.

Major Distance Education Theorists

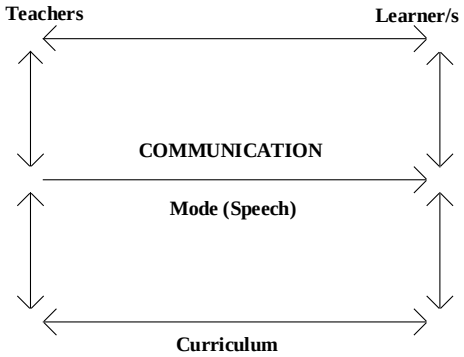
Charles Wedemeyer. Charles Wedemeyer's main emphasis was the independence of the student as characterized by his preference for the term "independent study." This term is most often used to describe programs at the university level. One of his major contributions is to "break what he called the 'space-time barriers' of education by separating teaching from learning." (Keegan, 1996, p .62) To do this teaching and learning must be planned separately. Wedemeyer proposed six concepts which must be present wherever there is at least one student. It was immaterial whether there was a teacher there or not.

1. The student and teacher are separated.
2. The normal processes of teaching and learning are carried on in writing or through some other medium.
3. Teaching is individualized.
4. Learning takes place through the student's activity.
5. Learning is made convenient for the student in his own environment.
6. The learner takes responsibility for his progress, with freedom to start and stop at any time and to pace himself. (Keegan, 1996, p. 62; Hanson, et. al, 1997, p. 8-9).

In addition to these six concepts, Wedemeyer added these thoughts. Every teacher-learner situation has four elements:

1. a teacher
2. a learner or learners
3. a communications system or mode
4. something to be taught/learned (p. 9)

These ideas can be described by a model which can be diagramed.



Michael Moore. Michael Moore created a classification method for distance education programs. He "classifies distance education programs as "autonomous" (learner-determined) or "non-autonomous" (teacher-determined)," and uses the following three questions to determine the degree of autonomy:

1. Is the selection of learning objectives in the program the responsibility of the learner or of the teacher (autonomy in setting objectives)?
2. Is the selection and use of resource persons, of bodies and other media, the decision of the teacher or the learner? (Autonomy in methods of study)?
3. Are the decisions about the method of evaluation and criteria to be used made by the learner? (autonomy in evaluation)? (Hanson et al., 1996, p.9-10).

In most traditional school settings, learners are very dependent on teachers. In distance education, the learner must be more responsible for what is learned and how it is learned. Some adult learners need "help in formulating their learning objectives and in identifying sources of information and in measuring objectives." (Keegan, 1996, p. 74)

Desmond Keegan.

Desmond Keegan described distance education as a separation of the teaching acts in time and space from the learning acts. In order to have successful distance education the two acts, teaching and learning had to be reintegrated. This reintegration required two things. First, learning materials have to resemble interpersonal communication as much as possible, or at least have as many interpersonal characteristics as possible. Second, a number of techniques were used to actually communicate with the student. From these ideas, three hypotheses were drawn.

Distance students have a tendency to drop out in those institutions in which structures for the reintegration of the teaching acts are not satisfactorily achieved.

1. Distance students have difficulty in achieving quality of learning in those institutions in which structures of the reintegration of the teaching are not satisfactorily achieved.
2. The status of learning at a distance may be questioned in those institutions in which the reintegration of the teaching acts are not satisfactorily achieved. (Keegan, 1995, p.126).

These theories and models as a matter of course became the framework for Course Design and the concept of teacher-centered learning.

Motivation Theory

Frederick Herzberg was a major researcher in the area of motivation, and one of the most well known. His theory claimed that there were certain factors, which if added, increased job satisfaction. These factors were defined as motivators. (Duncan, W. J. (1989).

Herzberg also discovered that there were other factors that existed that would not increase job satisfaction. However, if these factors were not present, job satisfaction would decrease. Herzberg named these factors hygiene factors. Hygiene factors include supervision, interpersonal relationships, physical working conditions, salaries, company policies, administrative practices, benefits and job security. If these hygiene factors were fulfilled, employees would not be dissatisfied, but they still would not be motivated. However, these hygiene factors must be fulfilled as a starting point. (Duncan, W. J. (1989), Herzberg, F., Mausner, B., & Snyderman, B. B. (1959), & Wren, D. A. (1987)).

In order to obtain job satisfaction among the teachers, the motivating factors must be present. Included in these motivating factors were: achievement, recognition for accomplishment, challenging work, increased job responsibility, and opportunities for growth and development. (Duncan, W. J. (1989), Herzberg, F., Mausner, B., & Snyderman, B. B. (1959), & Wren, D. A. (1987)).

According to a 1997 University study (Wolcott, 1997) the amount of time expended by teachers, in distance teaching, can take one away from other areas that may be more important to promotion. In this study she reaches several conclusions:

A. Distance education occupies a marginal status.
B. Distance teaching is neither highly valued nor well rewarded as a scholarly activity.
C. Distance teaching is not highly related to promotion and tenure decisions.
D. Rewards for distance teaching are dependent on the academic unit's commitment to distance education.

Studies by Ellis (2000) and Li (2002) support these conclusions.

In a follow-up article, Linda Wolcott (1989, p. 2), finds that "faculty have participated in distance education more from intrinsic than extrinsic motivation, ...for personal reasons such as the satisfaction gained from working with a new technology, interaction with practitioners in their field, or in providing educational access to an under-served student." Herzberg's theories of work do explain that satisfaction is its own reward. "Intrinsic factors

have a stronger appeal than extrinsic incentives offered by the institution." (p.2) This research is echoed by research by Schifter, (2000) and Bowman (2001). Shea, Motiwalla and Lewis's research (2001, p.116) also noted "income did not seem to be the motivating factor."

Research

A survey was created to measure the motivation of instructors. After brainstorming and discussions with professors, instructors, distance education coordinators, students, and others, a list was compiled of possible reasons an instructor might want to teach over the Internet. The final questionnaire contained 31 statements and each statement had six choices ranging from *strongly agree* to *strongly disagree*. One comment block and an additional 14 general demographic questions were also added.

Population

The target population of this research was instructors at two-year junior and community colleges, as well as technical schools, who delivered Internet-based courses, with this research study specifically targeting business and industrial/technical programs. This study was limited to two-year post-secondary schools in Texas.

In Texas, there were 54 colleges listed on the University of Texas Community two-year college Web page (http:// www.utexas.edu/world/comcol/state/). Some of these schools were divided into multiple campuses which have individual Web pages. When the separate campuses were added, the list included 75 schools which have a Web page and were reviewed for Internet courses. A total of 328 instructors were in the population.

Sample

The sample measured included all 328 instructors teaching business or industrial skills courses as identified by the institution's schedule of classes or by specific Internet course Web pages. Since the instructors were selected from their campus Web sites, it is assumed that they will have as a minimum e-mail and World Wide Web access.

For minimum sample size, the general rule of thumb suggested by Seymour Sudman (1976) in Gall, Borg, and Gall (1996) was used. When doing survey research, 100 subjects was the minimum for major groups and "20 to 50 in each minor subgroup" was the size recommended.

Instrumentation

A questionnaire was constructed, which contained 14 demographic questions, a Likert scale with 31 statements, each of which had a choice of six possible answers ranging from *strongly agree* to *strongly disagree*, and a comments box. A set of check boxes or radio buttons were available with each question. Check boxes are used when a respondent is allowed more than one answer, and radio buttons are used to limit the respondent to only one choice.

Reliability

Reliability was tested using Cronbach's alpha (α), which is a specialized form of the Kuder-Richardson Formula 20 (Isaac & Michael, 1995). This reliability measure was based on the consistency of responses to all items in the test, called the inter-item consistency. This inter-item consistency contains two sources of error variance: "(1) content sampling (as in alternate-form and split-half reliability); and (2) heterogeneity of the domain sampled." (Anastasi, 1988, p.122)

Validity

Since this survey was created to attempt to determine what the real factors are, face validity was used and ten instructors at two colleges were asked to review the survey instrument. The surveys were reviewed for visual

errors, for example: spelling, layout and question spacing. In addition, the reviewers were asked about the clarity and understandability of the statements themselves.

Data Collection Procedures

An e-mail, with the appropriate survey Web address set up as an active link, was sent to all instructors listed on the college web site. The recipients simply clicked the link, and were transferred directly to the questionnaire web site from which the data was collected. The respondent filled out the survey online, which took about 10 minutes. At the conclusion the respondent only needed to click the "submit" button to send the survey to the researcher. If the e-mail link did not function properly, a URL to copy and paste into the web browser was available in the e-mail. Using the Internet will reduce or eliminate many reasons for low response rates.

Data Analysis Procedures

Descriptive statistics were used on fourteen demographic questions and a factor analysis was used on the results from the Likert scale instrument. The responses were loaded into SPSS, and the results were tabulated. The new factors were identified first using a Pearson correlation matrix. The components were then rotated using the Varimax method of rotation, and a component transformation matrix is created.

Results

In order to answer the research questions, a factor analysis was run using the data collected from this sub group of the total respondents. Cronbach's alpha was run to determine the final reliability of the data received. The definitive alpha was .9308, greater than the .7 required for the test to be considered reliable. The data were subjected to the factor analysis and there were seven factors computed. Overall, these seven factors accounted for 80.16% of the explained variance. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.583, which was significant. In addition, Bartlett's test of Sphericity was run, which provided an approximation of Chi Square. The score returned was 0.000, with 465 degrees of freedom, so this test was also significant. The factor analysis produced eight components. The Rotated Component Matrix showing the components and loadings for the factor analysis is in Table 1.

Eight components, made up of the 31 variables from the Likert scale were found using the factor analysis. The eight components in order are labeled: Technical and Computer Challenges, School Promotion, Student Preferences, Personal Benefits, Receiving Computerized Assistance, Growth and Knowledge, and Textbook Company Assistance. Pay was the only variable in Factor 8, the least influential component.

Based on the study performed, the primary reason teachers teach over the Internet is that they are interested in the technical skills required to do so. After that they do it to support the school and the students. Interest in recruiting new students and ease of student use were very important. Only on the fourth factor of eight did the instructors as a whole report an interest in research, tenure, and pay.

Conclusions

By understanding why these instructors teach over the Internet, colleges can recruit more instructors to teach using the web thus allowing colleges to offer more Internet courses. They can also use the information to keep the instructors who are currently teaching over the Internet satisfied, and motivate them to continue to teach. A third reason for this research is to determine who the Internet instructors are. There is a need to examine who the instructors are and what makes the difference (if any) in their motivation for teaching over the Internet.

The primary motivating factor for these instructors was Technical and Computer Challenges. In order to motivate instructors, two-year colleges need to be willing to provide adequate funding for technological training in Internet based courses. For instructors who teach Internet based courses technical challenges (TECHCHAL), and acquiring more knowledge about technology (KNOWTECH) are the two most important components of the 31 provided. Providing an opportunity to advance in the understanding and application of the newest technology will ensure continued interest with the classes. Often textbook companies provide such training to the colleges, at no cost other than travel expenses.

The second factor was titled School Promotion. Its components include but are not limited to: (COM_ADVG) Competitive advantage for the school, (COL_SURV) College survival, and (COL_RCRT) College recruiting and retaining students. It is important to ensure that instructor recognition either publicly or privately, for their contribution to advancement of the success of their school and the additional recognition of their contribution to the student's success. This is an economical means of assuring instructor motivation for teaching these classes, and promotes a feeling of school interest.

The six components in the first factor, Technical and Computer Challenges can be characterized as being Herzberg's motivators. The solutions for filling those needs clearly fall into two categories: (1) opportunities for growth and development, and (2) challenging work. The components in the second factor are also motivating factors. By recognizing the instructor's need for achievement and giving recognition for their accomplishments, these instructors can truly be motivated.

It is interesting to note that PAY is the very least important of the 31 potential components. It with the other two components, (RESEARCH) and (CUR_SKIL), make up the last factor. Pay, Research, and maintaining current skills are hygiene factors, which must be met in order to retain instructor satisfaction.

This study should be repeated in a multi-state region to determine if the trends can be generalized to a larger population. This would allow a larger sample to be gathered. In addition to using the questionnaire on a broader scale, another area for examination would be four-year colleges. This would allow a comparison between two-year post-secondary schools and four-year colleges to determine if the results of this study apply to schools that have four-year programs. Schools of business, nursing schools, medical technological schools, and criminal justice programs are just a few of the programs that could be examined in this manner. A third area for investigation would be a longitudinal study re running the survey several years later.

Table 1

Rotated Component Matrix-All Subjects [a]

	Component						
	1	2	3	4	5	6	7
TECHCHAL	0.871						
LOVECOMP	0.834						
KNOWTECH	0.824						
KNOWSUB	0.785						
CUR_SKIL	0.746						
OWN_TIME	0.444						
COL_RCRT		0.877					
COM_ADVG		0.862					
COL_SURV		0.804					
CHNG_JOB		0.666	0.413				
RCH_STNT		0.660				-0.457	
COMMSTNT			0.785				
STNTCOMP			0.744				
STNTLIKE		0.404	0.734				
EASYSTNT			0.707				
STNFACE			0.554			0.428	
OTR_INST				0.757			
BETR_TCH				0.746			
RESEARCH				0.696			
SCL_MONY				0.639			
TENURE				0.597			
SAVETIME			0.431	0.493			
BOOKPART					0.809		
GRADELEC					0.751		
BOOKSITE					0.704		
ONLIN_RC					0.681		
SUPVISOR						0.779	
INTHING						0.581	
FREE_ISP							0.844
TECHPASS							0.549
PAY							0.790

[a] Rotation converged in 12 iterations.

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The Future Impact of Text Messaging

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Abstract

Text messaging or short message service (SMS) was created during the late 1980s to work with a digital technology called global system for mobile communications (GSM), which is the basis for most modern cell phones, has grown into a multi-billion dollar investment. Text messaging is gaining popularity as an advertising standard because it is relatively inexpensive and allows businesses to reach out to consumers who find it a convenient tool in their everyday lives. Business executives use text messaging for time-critical and very sensitive communication. It is considered the most valuable communication tool by business executives in most advanced markets. This technology is used by 1.8 billion people daily. It was estimated that over 100 billion dollars would be generated in revenue as a result of the use of text messaging (Ahonen & Moore, 2007). The objective of this study is first to analyze some of the ways SMS is being used in business globally. Then forecast the number of the SMS user based on giving data using the Linear Regression Equation.

Keywords: linear regression, text messaging, technology, business statistics, communication

Introduction

Text messaging has become increasingly demanding in today's workforce. Text messages can be sent from one cell phone to another, a cell phone and a computer, or between two computers. In business, people are constantly on the move, so it is hard to keep up with the work that accumulates on their agenda. With today's technology, text messaging gives one the ability to retrieve messages from other sources immediately. It allows individuals to review their voicemail only when needed and allows them to complete their tasks outside the office with better control over time management. This technology is especially useful when in the middle of a business meeting. Text messaging lets you receive alerts quietly and easily when decisions and actions are vital. Text messaging is widely utilized in the corporate sector. Text messaging is an excellent source for generating marketing ideas for any business. Campaigns such as those involving gifts through fast food coupons, and special offers, opinion polls, brokerage firms offering a variety of financial products, hotel reservations confirmations, alerts for special offers for merchandise, and educational instructions, etc. Text messaging allows employers and employees to communicate even when they are away from the office and each other. Even political candidates find text messaging useful in their efforts to increase voter participation. Charitable organizations now have the capabilities of raising fund through text messaging. News alerts, weather reports, billing information and notification of important events, credit card information and banking information are readily available through text messaging.

The study analyzes the activities involving text messaging while considering the impact it conveys to the business world. It has been determined that the growth of any business is dependent upon its level of communication. Within our global environment, whether outsourcing, exporting, licensing or directly investing in the economy, it is imperative that the lines of communication remain open. Text messaging is not only a proven method of doing business, but a growing venture both domestically and internationally. This paper contains a combination of charts, diagrams and data forecasted as preliminary results indicating an upward trend in the increased use of text messaging in the corporate world. Businesses in which text messaging can be utilized are virtually unlimited.

Literature Review

Technology has a massive impact on the way communication takes place in business. In order to prepare people to enter the business world with an up-to-date knowledge of communication, text message technology is necessary. Instant small loans are also made by text messaging. The European Union (EU) is displaying innovation in many ways. One of the ways is that they are standardizing credit across the EU based on a new legislation covers loans from €200 to €75 000. It does not cover mortgages and charge cards. The lower limit was set to cover quick loans made by mobile phone text

messages. This practice, which means money can be transferred to the borrower within 15 minutes, is on the rise and is particularly popular in Sweden and Estonia. (The Bankwatch, 2008)

Text messaging is used in numerous situations. According to Cable News Network (CNN), text messaging is constantly being used by United Kingdom hospitals to remind patients about outpatient appointments -- and could potentially save the National Health Service millions of pounds every year. Ealing Hospital in West London is one of the hospitals using text messaging to remind patients of routine outpatient and Magnetic Resonance Imaging, (MRI) scan appointments. This hospital sends 20 texts per day, reminding the patients in advance of the date and time of their appointment. Before using the text messaging system, the hospital relied solely on sending patients a letter as a reminder. (Clothier, 2004)

Text messaging is used in conjunction with a mobile tracking system aimed at cutting passenger waiting times for London buses by stopping the "bunching" pattern that sees several turning up at once and then a long gap until the next one. Bus operator Metroline sends text message alerts to its drivers that allows them to speed up or slow down to maintain more even intervals between buses. A pilot of the system on the North London route saw 70 percent improvements in "excess waiting time" statistics. GPS satellite technology feeds the location of the buses to a control centre over an Orange network. The control centre then sends the text alert to the driver's dashboard. Passengers can receive bus arrival information direct to their handset by texting a short code, while the location-based technology can be added to displays at bus stops. (McCue, 2003)

Teenagers today have integrated text messaging as a method of generating money for various campaigns. According to an article by Christine Varno, teenagers are raising money through text messaging. It is based on a fundraising benefit to support programs at the David S. Zocchi Brain Tumor Center at Monmouth Medical Center in Long Branch, New Jersey. The teens participating in the fundraiser are planning to raise $100,000 in 10 minutes, according to Judith Zocchi, who is the driving force behind the event. Zocchi went on to say, "It is a fresh take on a walkathon concept; only it is packaged in today's culture." (Varno, 2008)

The Student Public Interest Research Groups' (PIRG) New Voters Project and Working Assets, in cooperation with researchers from the University of Michigan and Princeton University, released a study demonstrating the effectiveness of using text / SMS messages to mobile phones to mobilize young voters in the November 2006 elections. The study found that text message reminders to new voters increased an individual's likelihood of voting by 4.2 percentage points. On the day before the election in November 2006, researchers sent text message voting reminders to over 4,000 mobile phone numbers chosen at random from a pool of over 8,000, mostly young people who had completed voter registration applications. Afterward, participants were matched to voter records to determine if they had voted in the election, and a sample was surveyed to gauge their reaction to the messages in Table 1.

Table 1: Comparison with Other Mobilization Tactics

Tactic	Mobilization Effect	Cost/ Vote Generated
Text/SMS Messages	4-5%	$1.56
"Quality" Phone Calls	4-5%	$20
Door-to-Door Canvassing	7-9%	~$30
Leafletting	1.2%	$32
Direct Mail	~0.6%	$67

For the past three elections young people have turned out in bigger numbers. In 2004, 20.1 million 18-29 year olds voted, up 4.3 million votes over 2000. More 18-29 year olds voted in 2004 than voters over the age of 65. In 2005, turnout in student-heavy precincts in New Jersey and Virginia increased 15 to 19 percent, even though turnout for other age groups decreased. In 2006, 18-29 year old turnout increased by 3 percent (nearly 2 million votes), nearly twice the increase of voters of all ages. By 2015 young voters will represent one-third of the U.S. voters and as such they'll have the ability to shape key issues and the direction of the country. Research has also found that young people turn out in bigger numbers if they are asked to vote, and targeted by non-partisan and partisan voter mobilization efforts. Young voters matter and they are a very mobile population and are increasingly difficult to reach by traditional campaign outreach channels such as telephone calls to landlines. A quarter of Americans under the age of 25 used a mobile phone as their only telephone in the first half of 2006. The mobile-only population is projected to reach nearly 30 percent of the entire American public by the 2008 Presidential election. (New Voters Project, 2007)

In America and other countries more takeout orders are being made through text messaging. Based on a study from Bruce Horovitz, a reporter from USA Today, fast food restaurant companies are rushing into what could be the future of takeout and delivery food: text ordering. He states in his study: "Papa John's (PZZA) is airing national TV spots to

promote the text ordering that it launched in November 2007. Domino's (DPZ) has offered mobile ordering — which requires cellphone Web access — since July 2007. Pizza Hut is about to start promoting both text and mobile ordering in 2008. Quiznos, Dunkin' Donuts and Subway have looked into text ordering. McDonald's (MCD) is testing a text order in Seoul. Starbucks (SBUX) tested it in London and at one U.S. store. Papa John's CEO Nigel Travis compares the potential to online ordering, which accounts for 20% of Papa John's sales. "Text is the way forward," he says. He predicts it will account for 3% of sales within two years. The potential pool of users is huge, considering Americans already send 30 billion text messages a month. Noah Glass, founder and CEO of GoMobo.com, predicts texting could account for 25% of all food takeout orders within the decade. Consumers wanting to text orders however must first visit Papajohns.com and set up a list of four favorite meals. (Horowitz, 2008)

Customers want to be informed and, in today's technology-driven world, it is important to be able to communicate with your customers however they wish. With "All About Trust's" text messaging program, made possible in conjunction with OTAir, a leading mobile marketing & media company that enhances and extends current advertising by utilizing the cell phone mobile device, you can contact your customer quickly, easily and discreetly. Table 2 below shows some statistics of interest concerning recent trends in text messaging and demographics. (MyAllAboutTrust.com)

Table 2: Recent trends in text messaging and the target demographic

• Over 17 billion text messages were sent in December 2006 alone
• Works with 98% of mobile subscribers
• Works nationally
• Cell phone penetration is 72%
• 95% of all incoming text messages are read
• 69% of US mobile subscribers use text messaging regularly, up from 41% in 2005

Source: MyAllAboutTrust.com/IM-Texting-Info.pdf

The SMS is a breakthrough communication medium as evidenced by growth year after year. As of December 2006, over *18.5 billion text messages are sent every month* – and that number has *grown by 250% each year for the last two years*. To validate the future growth, over the next 2 years, Verizon Wireless anticipated the number of text messages sent by their users on their network to grow nearly 2 billion from 400 million per month. SMS is also the only universal mobile platform for the masses. It does not require special equipment as it is already available on over 98% of all cell phones. (CellSigns: Mobile Statistics, 2007)

Based on an article from the Scotsman newspaper, nearly 5,000 text messages are sent every second in the UK, according to an industry report. Mobile-phone users sent more than six billion texts during December – a record high for a single month. Revellers sent 290 million texts on Hogmanay alone – 30 per cent more than the same night the previous year, the Mobile Data Association (MDA) said. Picture messages are also becoming more popular, with 57.6 million sent in December – up 55 per cent on the same month of 2006. The six billion text messages sent in December was up from 5.3 billion in December 2006, the MDA's UK Mobile Report found. And nearly a quarter (23 per cent) of UK mobile users accessed the internet via their handsets in December. This equates to around 17 million people, the report said. MDA chairman Mike Short said: "The mobile industry remains one of the fastest-growing sectors throughout the world."Whether you look at Asia, India, Europe or the UK, the story is the same: mobile technology is enhancing and even shaping the way we live our lives." (News.sky.com, 2008) The MDA represents the main mobile operators in the UK. "We reached 80 billion dollars worth of revenues out of mobile phone simple SMS text messaging in 2006," reported co-authors, Tomi Ahonen and Alan Moore in their book titled *Communities Dominate Brands*.

They emphasized the fact that if we combined all of the Hollywood movie box office revenues worldwide, all of the global music industry revenues and add all of the video-gaming revenues around the world, all three together, would not reach 100 billion dollars. All of this stems from the simplest, easiest messaging technology, used actively by 1.8 billion people on the planet. The world is quickly becoming aware of the fastest method of communication and the most private communication, as more people use SMS text messaging. Even more, SMS texting reaches 3 billion mobile phones – that is twice as many people as can be reached via TV, and almost three times as many as can be reached via the internet. It is the most widely used data application on the planet. Business executives use SMS for time-critical and very sensitive communications, it is considered the most valuable communication tool by business executives in most advanced markets

(apart from North America, which is still only experimenting with the fastest and most private form of business communication) (Ahonen & Moore, 2007).

Methodology

To predict the amount of U.S. text messaging users, Microsoft Excel was used to apply the linear regression equation mathematically. The process of predicting the future number of text messaging users involved two steps. The first step was to determine the regression line, which is a mathematical equation. The second step was to use the mathematical equation to estimate the number of text messaging users. The mathematical equation is the equation of a straight line. This equation expresses the functional relationship between two variables. In estimating Y values from x values, the value of Y is a function of x and uses the slope-intercept form of the equation for a straight line. The equation for a straight line used in estimation is:

$$Y = a + bx$$

Where

Y = estimated score

a = Y intercept

b = slope of the line

x = given score

The slope of a line is defined as the amount of change in Y that corresponds to a change of 1 unit in x. The slope of a line can be positive or negative and can be less than or greater than 1. The intercept of the line is defined as the value of Y where x equals 0 (Jurs, 1998). A Linear Regression (LR) line is a trend line that is drawn mathematically so that it represents the 'best fit' for the data points it passes through. The formula uses the least square method to determine the line's placement. This minimizes the distances between the data points and the trend line (Arrington, 2006).
The first step was to calculate the value of *b* by using the formula below:

$$b = \frac{\sum (x-\bar{x})(y-\bar{y})}{\sum (x-\bar{x})^2}$$

After *b* was calculated, the next step was to calculate *a* by using:

$$a = \bar{y} - b\bar{x}$$

After both *a* and *b* were calculated, they were then substituted into the Y formula to estimate the text messaging users for years 2008 through 2010.

Data Collection

Data used in this research to predict the number of SMS users per year were from the CellSigns: Mobile Statistics. Given the availability of data, the use of information from the "CellSigns: Mobile Statistics" filed from 2003 through 2010 are shown in Table 3 as predicted, targeted years.

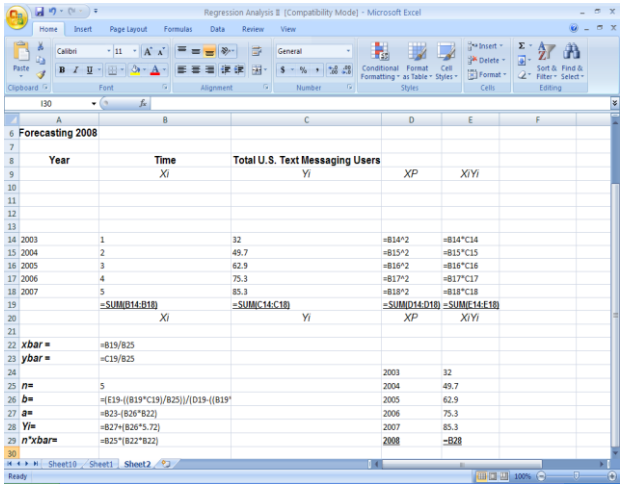
Table 3: CellSigns: Mobile Statistics U.S. Text Messaging Users

Year	U.S. Text Messaging Users (Millions)
2003	32
2004	49.7
2005	62.9
2006	75.3
2007	85.3
2008	92
2009	96.2
2010	100

Methods and Analysis of Outputs

The data collected for 5 consecutive years were analyzed accordingly by means of the quantitative technique using the linear regression equation. Microsoft Excel also allows the user to predict the average value for y for a specified value of x in a number of approaches. In the first approach, the user enters the regression formula in a worksheet cell and inserts the value or cell location of the value for the independent variable, x, into the formula. The cell would then display the predicted y value. Formulas were used to compute and estimate text messaging users for the following years: 2008 through 2010. Based on the data from 2003 to 2007, the predicted number of SMS users for 2008 were calculated. After that 2008 forecast was calculated, the process was repeated to predict the number of text messaging users for 2008-2010 by incorporating it into the data tables shown in Table 4.

Table 4: Predicting 2008 Output View using the Linear Regression



The Forecast function is a linear regression method used in calculating, or predicting, a future value by using existing values. The estimated value is a y-value for a given x-value. By using the Forecast function, results of the predictions from 2008 to 2010 were as follows: 2008, 96.9 million users; 2009, 108.1 million users; 2010, 119.3 million users as shown in Table 5. The predicted results are higher than the "CellSigns: Mobile Statistics" estimates. Once a good fitting relationship was found, it was used to predict the average value for y for a specified value of x.

Table 5: Predicted SMS Users in Output View using the Forecast Function

Year	U.S. Text Messaging Users (Millions)
2008	96.9
2009	108.1
2010	119.3

In the second approach, Trend was used to predict the text messaging users in the United States. The Trend function is similar to Forecast. A linear relationship is assumed between the x and y data sets. However, TREND is an array function and returns an array of unknown y values. The first two arguments to TREND are the Known x and y data sets. The third argument is the array of x values for which we wish to predict the corresponding Y data. Where x values are the years and y values are the millions of text messaging users in the United States. The general format for this function is:

=TREND (range of y values, range of x values, range of x values to be used for predicting). The TREND function allowed the user to select the range of values from Table 6.

Table 6: Predicted Text Messaging Users in Output View using the TREND Function

Year	U.S. Text Messaging Users (Millions)
2005	62.9
2006	75.3
2007	85.3
2008	=TREND(B5:B7,A5:A7,A8)
2009	=TREND(B5:B8,A5:A8,A9)
2010	=TREND(B5:B9,A5:A9,A10)

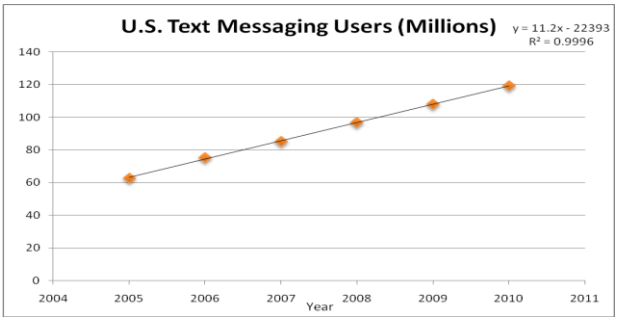
The second and following estimated y values were subsequently computed as shown in Table 7.

Table 7: Predicted Text Messaging Users in Output View using the TREND Function

Year	U.S. Text Messaging Users (Millions)
2008	96.9
2009	108.1
2010	119.3

Figure 2 was created to show the trend line in the first approach in estimating the SMS text messaging users using the data.

Figure 2: Forecasted Text Messaging Users TREND Line

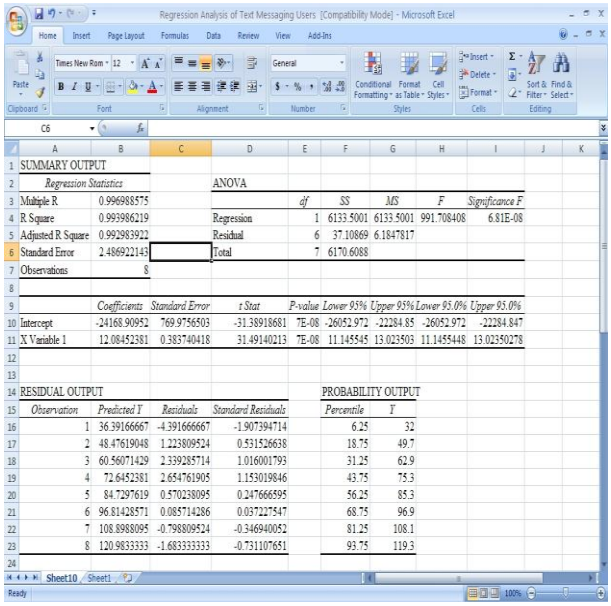


First of all, Figure 2, the increasing trend line showed the best relationship for this data as the equation y = 11.2x – 22393, where x, is the year of text messaging users and y is the amount of text messaging users. Secondly, the coefficient of determination is R^2= 0.9996, which indicates that the equation fits the data very well. Therefore, R^2 is a good single measure of the strength of the relationship. In summary, the simple linear regression analysis yielded a scatter diagram

providing a visual interpretation of the relationship between two variables: the equation for the straight line relationship and R^2, a good measure of strength of the linear relationship.

In the second approach for estimation, the statistical function called TREND was used to generate forecast values. The values generated by Excel's TREND function yielded the same results for the first approach. The statistical function is an alternative method to predict the text messaging users for as many years needed. In the third approach for predicting U.S text messaging users, using the Regression Analysis Tool, output is generated by Excel as shown in Table 8.

Table 8: Predicting Text Messaging Users Using the Regression Analysis Tool



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.996988575
R Square	0.993986219
Adjusted R Square	0.992983922
Standard Error	2.486922143
Observations	8

ANOVA

	df	SS	MS	F	Significance F
Regression	1	6133.5001	6133.5001	991.708408	6.81E-08
Residual	6	37.10869	6.1847817		
Total	7	6170.6088			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-24168.90952	769.9756503	-31.38918681	7E-08	-26052.972	-22284.85	-26052.972	-22284.847
X Variable 1	12.08452381	0.383740418	31.49140213	7E-08	11.145545	13.023503	11.1455448	13.02350278

RESIDUAL OUTPUT

Observation	Predicted T	Residuals	Standard Residuals
1	36.39166667	-4.391666667	-1.907394714
2	48.47619048	1.223809524	0.531526638
3	60.56071429	2.339285714	1.016001793
4	72.6452381	2.654761905	1.153019846
5	84.7297619	0.570238095	0.247666595
6	96.81428571	0.085714286	0.037227547
7	108.8988095	-0.798809524	-0.346940052
8	120.9833333	-1.683333333	-0.731107651

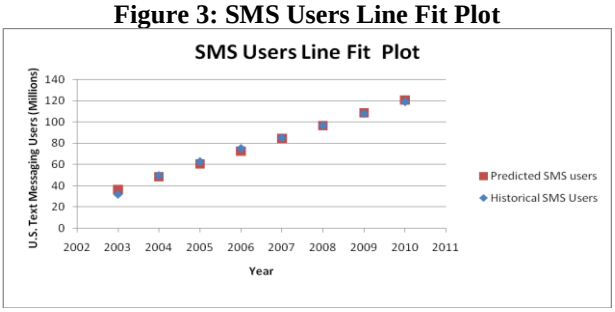
PROBABILITY OUTPUT

Percentile	T
6.25	32
18.75	49.7
31.25	62.9
43.75	75.3
56.25	85.3
68.75	96.9
81.25	108.1
93.75	119.3

The numerical output of Table 8 is presented in four parts from top to bottom. The top result, labeled Regression Statistics, presented the values for the coefficient of correlation *r*, labeled as Multiple R. The coefficient of determination, r^2, labeled as Adjusted R Square the standard error of the estimates is labeled as Standard Error; and the sample size is labeled as Observations. The second result, found under the label ANOVA, provided an analysis of variance output for the regression. The third result presented the regression coefficients together with statistics for evaluating the significance of the coefficients, such as the t statistic values, p-values, and confidence intervals. Finally, the bottom result, labeled Residual Output, provided the predicted y values for each of the data points in the sample along with the residual and standardized residuals.

Statistical values were given for testing the significance of the relationship with the p-value approach. From the ANOVA table's output, the value for the F statistic was 991.708, with a corresponding Significance F value of 6.81E-08. The Significance F was the p-value for the overall regression relationship categorized as "Very Highly Significant." Concluding that it is a good relationship based on the given data. In a simple linear regression analysis, the same conclusions can be reached based on the t statistic for the regression coefficient for text messaging users. The year coefficient was 12.084 with a t statistical value of 31.491and a corresponding p-value 7E-08. For simple linear regression analysis, the p-values for this t statistic and for the prior F statistic will always be exactly the same. The relationship was statistically significant. The line fit plot of Figure 3 shows the predicted y value for each of the x values of the input data.

Figure 3: SMS Users Line Fit Plot



Conclusion

Text messaging is about the essence, quality, and new way of communication in addition to identifying reasons for uses in business and personal life. This analysis is intended to bring awareness to the benefits and usefulness of text messaging. In observing the relevance of text messaging it has proven to be a valuable tool for future technology expansion. Investigation into text messaging has identified its technological characteristics and their effect on the community. Text messaging, unlike phone calls, reduces inconvenient moments by providing privacy and security when necessary. The statistical results from 2003 to 2010 indicate that text messaging is a powerful tool that is still gaining popularity at a rapid rate and will likely continue to have an immense impact on the ways in which we communicate with each other. Further inquiries indicate that 100 billion dollars had been generated as revenue in 2007 from text messaging, with a more definite increase in the future. Text messaging is a service which indicates an important alteration in the manner of communication within many contemporary societies. Text messaging is a communications medium that illustrates the sociological change occurring today.

Wireless text messaging has added new dimensions to communiqués. It has the potential to reach limitless levels as carriers become aware of the revenue opportunity for text messaging. As we become fully aware of the impending ability of text messaging in North America, with carriers working together in a network, this partnership can drastically improve an already successful enterprise. This partnership will create higher usage of messaging on all levels, become more readily available to customers creating a more relaxed environment, and smooth the progress of one of the greatest revenue-producing text based wireless services.

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Online Business Program Quality: Analysis of Student Perceptions

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Abstract

The continued growth of online student enrollment in higher education has brought increasing pressure to assess program quality. This research study focused on student perceptions of program quality and satisfaction related to a fully online baccalaureate management degree program. Respondents' reasons for enrolling paralleled those identified in the literature—availability, convenience, and flexibility. High levels of satisfaction with courses in all subject areas were reported. The analysis indicates that in developing an online program focus should be placed on the following: effective course organization, integration of varied course tools, instructor relationships with students, meaningful interactions among students, structured teaming, instructor timeliness, and flexible course activities.

Key Words: assessment, curriculum development, online education

Introduction

Online student enrollment in the United States for several years has been growing at a faster rate than overall higher education enrollment. A 2007 Sloan Consortium study reported that online enrollment has increased from 9.7 percent to 19.8 percent of the total higher education enrollment between 2002 and 2006. About 3.5 million students were enrolled in an online course in the fall of 2006. From 2005 to 2006 the number of educational institutions offering fully online degree programs increased from 31 to 35 percent (Allen & Seaman, 2007). This growth in online programs makes them increasingly competitive both in the marketplace and with traditional courses and programs. Both marketplace competition and requirements of accrediting agencies pressure online programs to provide educational quality equal or superior to traditional programs if long-term program success and credibility are to be assured.

This research study (1) reviewed literature relating to outcomes of online education and (2) analyzed the perceptions of program quality and satisfaction of students enrolled in a fully online baccalaureate business degree program in a southern metropolitan university. The university is classified as a Research II institution, with an approximate 12,000 student enrollment. This research provides a framework for identifying desired characteristics and barriers to online education.

Online programs at the university are supported with training and technical assistance from an extended programs division. All Management faculty teaching online have attended a 12-week program providing instruction in course design and delivery. During the training instructors develop an online course reflecting current pedagogy in the e-learning field. Technical staff are available to provide on-going assistance with course redesign, implementation of new technology, and miscellaneous needs. This research identifies desired characteristics and barriers to effective online programs in this culture of high institutional support for e-learning.

Select Literature Relating to Student Achievement and Trends in Online Education

Research has indicated that online students perform or feel they perform as well or better than traditional students (who are often younger) and/or are very satisfied with their online education (Andriole, 1997; Driver, 2002; Dutton, Dutton, & Perry, 2001; Hiltz, Zhang, & Turoff, 2002; Meyer, 2002; Navarro & Shoemaker, 2000; Sener & Stover, 2000; Terry, 2000). Quality of education in the e-environment, however, depends upon having quality controls in effect (Chua & Lam, 2007; Singh & Pan, 2004). Unique controls must be operating to assure that the same quality standards are met in online as well as traditional classes; for example, course content, pedagogy, and staffing and development, at minimum, must be monitored. Research indicates that in equal-quality online classes faculty time per student often increases in relation to traditional classes; thus if comparable quality faculty teach the online classes, course related costs are higher than

in traditional classes, which may not be size limited (Smith & Mitry, 2008). Institutions must be willing to invest appropriately in the online program if quality is to be assured.

E-learners and educational institutions report many advantages and disadvantages, or barriers, of online education, such as the following (Hoffmann, 2002; Lee & Nguyen, 2007; McCall, 2002; Moallem, 2007; Navarro & Shoemaker, 2000; Northrup, 2002; Singh & Pan, 2004): (1) Advantages—Availability, Convenience, Flexibility, Interactivity, Expanded Learning Opportunities, Feedback, Learner Control, Equality of Participants, and Dependence on Evolving Technologies; (2) Disadvantages—Lack of Socialization with Peers, Lack of Face-to-Face Communication, Negative Impact on Development of Team and Interpersonal Skills, Feelings of Isolation, Ease of Procrastination, Higher Program Costs, and Home Distractions. Contrary to some of the identified disadvantages of online education, research has reported increases in the development of various types of both technical and soft skills among students in online versus traditional courses: increased writing skills (Meyer, 2002; Velayo, 2001; Wiesenberg, 1999); increased critical thinking and transfer of learning (Meyer, 2002); improved team skills (Havice, Havice, & Isabell, 2000); and improved collaboration (Waterhouse, 2001, March; Wiesenberg, 1999). These characteristics of quality online education result from appropriate resource investments and systems of program control.

Overall the e-learning movement is resulting in a teaching paradigm shift from the traditional lecture-based, teacher-centered approach to instruction to a student-centered, assisted approach to learning. Whether in online, hybrid, or web-facilitated classes, students are increasingly expected to become more responsible for their learning, with the assistance of a faculty facilitator (Dykman & Davis, 2008).

The literature evaluating the significance and characteristics of online education continues to evolve. The e-learning phenomenon has evolved so extensively, however, that each study must be carefully evaluated considering the type of online instruction/technology used, the delimited time frame involved, and other relevant institutional and student characteristics. One must be cautious in applying research conducted under specific conditions to other institutions of differing environmental characteristics. Yet implementation and continued development of quality online education is a necessity in today's educational arena. The 2007 Horizon Report lists the following as the number one trend as most likely to have a significant impact on education in the next five years: the changing environment of higher education, which is resulting in increased need for distance education (The New Media Consortium and EDUCAUSE Learning Initiative, 2007).

Analysis of Student Perceptions

Students enrolled in a fully online baccalaureate business management degree program were surveyed during fall-spring, 2007-2008, to determine the following:

- Reasons for enrolling in a fully online program,
- Factors or course characteristics that contribute to good learning experiences in online classes,
- Examples of positive learning experiences in online classes,
- Comparison of satisfaction in courses in various areas of the curriculum (accounting, economics, finance, management, marketing, nonbusiness),
- Comparison of effort expended (time) in online classes in relation to traditional classes,
- Suggestions for program improvement, and
- Preference for fully online versus hybrid classes.

The initial request for students enrolled in the program to complete a survey was distributed via e-mail during October; in addition, the survey was mailed to student home addresses and a second e-mail request was sent during November and February. A 60 percent rate of return was achieved (86 responses from 143 enrolled in the program).

One-way ANOVA was used to analyze differences among mean ratings of satisfaction in courses in various areas of the curriculum; where differences existed, Tukey's Pairwise Comparison Method was used for follow-up analyses. Correlation analysis was conducted to see if differences existed in the amount of time expended in fully online courses versus face-to-face courses and if overall rating of the online program differed based on age of the respondent and years of fulltime work experience.

Demographics of Respondents

Eighty-four of the 86 respondents indicated their sex—13 male (15 percent), 71 female (85 percent). Ages of the respondents were as follows: 16 (18.8 percent), under 25; 57 (67.1 percent) from 25-39; 12 (14.1 percent) over 39. Ninety-four percent of the respondents were juniors or seniors: 5 (5.8 percent), sophomore; 36 (41.9 percent), junior; 45 (52.3 percent), senior. Seventy-nine percent had over five years of full-time work experience: 5 (6.0 percent), less than one year;

7 (8.3 percent), from one to three years; 6 (7.1 percent) from over three to five years; 18 (21.4 percent), from over five years to ten years; 48 (57.1 percent), over ten years. Sixty-two percent lived over 30 miles from campus, with 30 percent living over 90 miles from campus.

Reasons for Enrolling in Program

Students indicated varied reasons for enrolling in the online program. The reasons related to the following:

- Commute time to campus/expense involved,
- Conflict of personal life with on-campus course schedules,
- Convenience and flexibility of program delivery,
- Prestige of school versus that of other online programs,
- Program content,
- Program credibility,
- Program accessibility,
- Student friendliness, and
- Work/travel restrictions.

These reasons for enrolling in the online program parallel those identified in the literature—availability, convenience, and flexibility.

Program Strengths and Positive Learning Experiences

Participants were asked to identify strengths of the online program and positive learning experiences. These responses greatly overlapped. Following are a sample of the program strengths and positive learning experiences identified:

- Anytime access to class,
- Audio/PowerPoint lectures,
- Audio/video of lectures,
- Calendar feature,
- Detailed syllabus/assignments,
- Ease of communicating with other students (virtual environment),
- Forced time management,
- Flexible time frame for assignments,
- Interactive experience with faculty/students,
- Instructor involvement/availability,
- Limited distractions from other students,
- Opportunity for networking with other students,
- Participation in weekly discussions,
- Positive responsiveness from instructors,
- Precise expectations/directions, and
- Well organized classes

Analysis of the detailed student responses revealed that students positively identified with (1) instructor involvement with students, (2) well structured, organized course delivery, and (3) opportunities for interaction with other students and instructors. These desired program components, when present, counteract the frequently cited disadvantages of online instruction—lack of socialization with peers, lack of face-to-face communication, and feelings of isolation, to name a few. The online training for instructors at the university emphasizes the importance of well designed discussions with instructor interaction and the effective use of chats and team activities. These course components seem to positively impact student satisfaction.

Satisfaction with Online Courses by Subject Area

Respondents were asked to rate their satisfaction with fully online classes taken at the institution using the following scale: 5, very satisfied; 4, satisfied; 3, neutral; 2, dissatisfied; 1, very dissatisfied. Mean ratings by subject area are shown in Table 1.

One-way ANOVA revealed no significant difference between the mean ratings ($p = 0.298$).

Table 1

Rating of Satisfaction of Online Courses by Subject Area

Subject Area	n	Mean Rating
Accounting	34	4.35
Economics	37	4.22
Finance	19	3.79
Management	75	4.36
Marketing	40	4.40
Nonbusiness	49	4.33

Mean satisfaction score was lowest for "Economics" and "Finance," highest for "Accounting, Management, and Marketing"; however, the mean ratings were not statistically different. High levels of satisfaction with courses by subject area were reported.

Effort Expended in Online Courses

Respondents were asked to rate the amount of time spent on a fully online course (preparing and completing assignments) compared to a traditional face-to-face course using a scale of 1-5, with 1, spend much more time in an online class; 2, spend more time in an online class; 3, spend about the same amount of time in an online class; 4, spend less time in an online class; 5, spend much less time in an online class. The mean rating was 1.99 (see Table 2).

Table 2

Perceived Time Spent in an Online Class Compared to a Face-to-Face Class

Time Spent	n	%
Much More Time in Online Class	28	33.7
More time in Online Class	32	38.6
About Same Amount of Time in Online Class	19	22.9
Less Time in Online Class	4	4.8
Much Less Time in Online Class	0	---

Seventy-two percent of the respondents indicated that they spent more time in an online class than in a face-to-face class. Critics of online education frequently voice that online classes are easier and less time consuming than face-to-face classes. These students' perceptions indicated otherwise.

Correlation analysis was conducted to see if the perceived time spent in an online class compared to a face-to-face class differed based on respondent age and years of work experience in a fulltime job. No significant correlation was found between time spent and age ($p = 0.462$) nor between time spent and years of work experience ($p = 0.743$). These often cited factors of student maturity were not found to be related to relative time spent in an online class.

Overall Program Quality

The respondents rated the overall quality of the online program, using a scale of 1-5, with 1, needs major improvement; 2, needs improvement; 3, average; 4, good; 5, exceptionally good. The mean rating was 4.32.

These program strengths were identified:

- Ability to work at own pace and personally determine effort to expend,
- Accessibility from anywhere anytime,
- Accessibility to and interaction with professors,
- Anonymity in participation,
- Development of self reliance skills,
- Improvement of time management and self-discipline skills,
- Integration of real world virtual activities,

- Opportunity for group interaction,
- "Perfect" class attendance,
- Quick feedback, and
- Use of discussion board.

Respondents provided these suggestions for program improvement:

- Avoid "busy work,"
- Offer all courses each semester,
- Provide flexible exam scheduling,
- Provide additional learning assistance, such as audio lectures,
- Provide videotapes of face-to-face classes,
- Reevaluate the value of "chat,"
- Reevaluate value of group work and its integration into online courses, and
- Require all instructors to "teach," rather than treat the course as a correspondence course.

The limited number of suggestions for program improvement in relation to the number of positive comments was interpreted to be a positive reflection on the program.

Preference for Fully Online Versus Hybrid Delivery

The respondents were asked if they would like fully online classes to meet on campus three or four times each semester for required meetings. Some instructors have voiced that they would like to have face-to-face meetings on campus a limited number of times each semester (hybrid course delivery) to accomplish learning objectives more difficult to meet in the fully online delivery format.

The respondents overwhelmingly voiced they did not want on-campus meeting times—2 percent responded "yes"; 98 percent responded "no." The respondents indicated consistently that requiring on-campus classes would defeat the convenience advantage of the online program.

This online program had been advertised as fully online; students live throughout the state, with some in other states and other countries. Thus the student population of the program was not interested in hybrid course delivery.

Summary of Findings and Implications of the Research

This research study was designed to evaluate student perceptions of the quality of a fully online baccalaureate degree program in Management which operates in a culture supportive of e-learning. Results indicate that students are very satisfied with the method of program delivery, the structure of the courses, and the quality of learning.

The respondents highly rated overall online program quality—4.2 on a 5-point scale. Statistical analysis, however, revealed no differences in student satisfaction with online courses in differing subject areas. The majority of students felt they spend more time in an online class than in a face-to-face class. Perception of time spent was not correlated to either student age or years of fulltime work experience.

The identified program strengths and suggestions for improvement focused on the importance of the following:

- Effective course organization,
- Integration of course tools to promote learning among students with varied learning styles,
- Instructor relationships with students,
- Meaningful interactions among class members (including required discussions/chats),
- Structured teaming,
- Instructor timeliness, and
- Flexible timing of course activities.

High preference for fully online versus hybrid course delivery was expressed.

This research reinforces the need for educational institutions to evaluate student perceptions of the quality of online instruction, one component of an online program assessment. Such evaluation will help focus on factors of program success, as identified in this research. Overall, however, student satisfaction is impacted, directly or indirectly, by faculty development and resulting performance, the technology in use, and delivery monitoring systems which have been implemented.

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