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Communicating Health Messages in the Digital Age

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COMMUNICATING HEALTH MESSAGES IN THE DIGITAL AGE

by

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A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
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This project/paper will compare effects of past technologies on society to the cultural transformations from today's greatest technology, the Internet. Internet habits of the college age culture are researched as well as a look at how today's students use the Internet in obtaining and utilizing health care information found on the web. This research, including a survey of social media use in university health centers across the United States and a survey of current university students' website usage, will assist in the case study of the re-design of a university health center website. Current issues will be corrected while fulfilling the needs of the students, the university community, and the requirements of the health center, and staying within university guidelines.

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INTRODUCTION

Myriad events in the world act as a catalyst to create change. Some are controllable and others are not, but it could be argued that nothing has caused greater change to our world than technology. We cannot revert to a time before a technology's creation, nor completely control the resulting effects it will generate. Effects resulting from technology are sometimes obvious and instantaneous, yet other times changes will not be seen until we look back centuries later. Effects from technology can be miniscule, completely encompassing, or perhaps even catastrophic such as nuclear weapons, and history proves that cultural, environmental, or social changes can be pinpointed to effects from technologies that initially seemed quite innocuous.

This paper compares effects of past technologies on society with cultural transformations from today's greatest technology, the Internet. Internet habits of the traditional college student were researched as well as a look at how today's students use the Internet in obtaining and utilizing health care information found on the web. This research, including a survey of social media use in university health centers across the United States and a survey of current university students' website usage, will assist in the case study of the re-design of a university health center website. Current issues will be corrected while fulfilling the needs of students, the university community, and the requirements of the health center, and staying within university guidelines.

CHAPTER 2

A HISTORY OF TECHNOLOGY AND INTERNET COMPARISONS

Today we are in the beginning stages of the impact the Internet will have on us, our society, the way we live, think, react, and interact. Large portions of our lives revolve around the Internet and it will undoubtedly affect us, whether we are heavy users of the Internet or have little to no Internet access. The Internet is predicted to do great things for the world and people have unfounded expectations for it, while others fear its power. In 1995, Bill Gates foretold, “The Internet is a tidal wave. It will wash over the computer industry and many others, drowning those who don’t learn to swim its waves” (Quitney-Anderson, 2005, p. 13). Logically, because of its infancy, we have no way of predicting the trickledown effects that are still to come; yet some effects of the Internet are already comparatively similar to technologies of the past.

Internet History

In 1945, Vannevar Bush wrote a particularly insightful paper describing a vision of the future where a machine, called a Memex, would hold a vast amount of information that could easily be recovered. He had an idea of how all this information would be cross referenced, not in a traditional way like the library would, but in a way where there would be a cross linking of memories that could lead you to specific information from many different avenues, similar to today’s use of keywords and tags (Bush, 1945, p. 8). Bush’s visions inspired another forward-thinker, Ted Nelson, who also hinted toward the future with his ideas of

hypertext. Nelson (1965), made a prediction of a future system so complex it could not be demonstrated on paper (p. 144). His vision of hypertext was an idea in which linked text or images on computers performed certain functions upon request (Nelson, 1974, p.314).

In the beginning, the Internet was known as ARPANET, “which was born from an inspiration and a need” (Abbate, 1999, p. 43). In 1960, Joseph Licklider, the first director of ARPA’s (Advanced Research Projects Agency) Information Processing Techniques Office (IPTO), wrote a paper titled “Man-Computer Symbiosis.” This paper was a new paradigm in the computer science and technology world, where technology would not be a forced assimilation between man and machine, but instead the technology would attend to the requirements of the human user (Abbate, 1999, p. 43). Licklider (1960) states, “The hope is that, in not too many years, human brains and computing machines will be coupled together very tightly, and the resulting partnership will think as no human brain has ever thought and process data in a way not approached by the information-handling machines we know today” (p. 74). He had a vision of computers working in “real-time” with sophisticated operations such as speech recognition, but most importantly, he envisioned a “thinking center” like a library that is a network of computers retrieving stored information (Licklider, 1960, p. 74-81).

An MIT program manager, Lawrence Roberts, who was persuaded by the government to join ARPANET in 1966, made Licklider’s inspiration a reality (Abbate, 1999, p. 47). The research he was about to undertake would eventually

change the world. What started out as a few linked computers capable of freely sharing information, resulted in being the beginning of the brilliantly networked world we know today. In 1995, the privatization of the Internet infrastructure from the control of the government opened the door to commercial, social, and recreational use (Abbate, 1999, p. 199). Throughout the next few years of changes, the “Internet’s administrative and technological structures remained remarkably decentralized. No one authority controlled the operation of the entire Internet” (Abbate, 1999, p. 208).

Even with the capability of transferrable information between computers, this information was difficult to locate and retrieve. Combining Tim Berners-Lee’s creation of hypertext transfer protocol (HTTP) and the use of search engines, now known as the World Wide Web, “gave users more control on how their information was presented to them” (Abbate, 1999, p. 217). The Web showed that the Internet, without centralized ownership, was prolific for individual users to exercise their creativity by the continual addition of new or improved content (Abbate, 1999, p. 220).

The predictions of Bush, Licklider, and Nelson eventually came to fruition by development of the Internet and also in the creation of Tim Berners-Lee’s World Wide Web, establishing a technology that could arguably be the greatest technological development of our time. This technology has created a one-world community, with the potential to connecting everyone on the planet who has access to it. Today, wireless capabilities have taken this technology to the next level as mobile devices allow us the opportunity to be continually connected.

Perhaps the most remarkable early prediction was that of Ted Nelson (1974), when understanding we were on the brink of a technological revolution said, “When you can’t tear a teeny kid away from a computer screen, we’ll have gotten there” (p. 317). According to that prediction, we are there.

The Printing Press and the Internet

One of the most powerful technological breakthroughs of the Middle Ages was the invention of the printing press. In 1450, Johann Gutenberg invented the movable type printing press, taking the once laborious job of hand copying text by scribes, to creating unlimited pages of text quickly, accurately, and cheaply (Dewar, 1998, p. 5). This invention made books, which at that time were typically owned by the church and the elite, readily available to the average person.

Two of the more obvious effects of the printing press are the Reformation and the enormous educational advantage for the people of that time (Dewar, 1998, p. 11,16). However, Elizabeth Einstein explores the ideas of how the printing press had far greater effects on how we learn, which had not been previously considered or fully researched. After extensive study of this time period and the years following, Einstein claims that even though pre-existing tools such as cross referencing, foot notes, and page numbering had been used since the scribal culture, print allowed these elements to be used to their full potential where existing knowledge could be compared, corrected, and improved, “stimulating the emergence of new forms of knowledge” (Bawden & Robinson, 2000, p.55).

Similar to the changes the printing press introduced, the Internet today takes new and existing knowledge to an extraordinarily advanced level of comparing, learning and improving limitless areas of information. Not only is the data network system extremely sophisticated, information can be located in milliseconds. We have become extremely reliant on the Internet as it has replaced the way we research information, read, learn, communicate, socialize, and potentially so much more. The Internet has replaced the encyclopedia with Wikipedia and if someone has a question, he just uses the Google search engine for an instant answer. Email, being instantaneous, makes one wonder how we once survived with only the telegraph. Information is readily available every minute of the day if one has access to the Internet.

The Telegraph and the Internet

There are many different aspects of technology and frequently we fail to consider everything it takes to make a technology work effectively. In his article about the telegraph, Downey (2003) demonstrates the numerous actors in the structure of a technology (p. 139). First, we have the creator of the telegraph, but it also requires senders and receivers, printers and repeaters, lines and piles, typewriters, and batteries, all working in unison for the technology to succeed, and these different groups of actors must negotiate their roles in unison (Downey, 2003, p.139). As we compare the inner workings of the Internet to that of the telegraph, every actor plays a specific role and it takes all parts to function cohesively and follow the same rules to be effective. These actors include

senders and receivers, computers, cables, servers, clients, routers, IP addresses, Domain Name Systems, and Local Area Networks, and if not all harmoniously interconnected, the Internet will cease to work. “The components are extremely important in modern life -- without them, there would be no Internet. And without the Internet, life would be very different indeed for many of us” (Tyson, 2001).

The inner workings of the telegraph and Internet have many similarities, and as time progressed, so did many of the actors. Typewriters have been replaced with computers and the wire lines have progressed to fiber optic cables. The telegraph seems insignificant in comparison to the complexities of the Internet, however they both require human and machine interaction for the process to work. Today, the Internet relies on computer servers as much as it does humans, but without user-generated content, the Internet would be worthless. We do not know what the future holds as far as technologies and the need for human interaction, but for now, the Internet serves to enhance the lives of people, not replace them.

The Air Condition in the South and the Internet

Another observation of the effects of technology can be made when investigating the invention of the air conditioner and its changes to Southern culture. In an article by Raymond Arsenault (1984), he observed:

> Before the air conditioner was introduced to the south, southerners had a completely different lifestyle. Because of the heat, life had an extremely

> slow pace and Southerners had a “siesta mentality”. People would seek the shade of a tree or would sit on their shaded porches, which fostered a neighborly attitude in the rural setting. However, air conditioning in the south was held responsible for such things as a population explosion, higher birth rates, increased tourism and migration. Air conditioning “has contributed to the change of southern way of life, influencing everything from architecture to sleeping habits, but most importantly the erosion of several regional traditions: cultural isolation, agrarianism, poverty, romanticism, historical consciousness, an orientation towards non-technological folk culture, a preoccupation with kinship, neighborliness, a strong sense of place, and a relatively slow pace of life (p. 616).

Frank Trippett put it this way, air conditioning has “seduced families into retreating into houses with closed doors and shut windows, reducing the commonality of neighborhood life and all but obsolescing the front-porch society whose open casual folkways were an appealing hallmark of a sweatier America” (Arsenault, 1984, p. 623). Similarly, even in the 17th century after the creation of the printing press, people complained of the “sullen silence” in coffee shops because everyone was reading newspapers instead of being engaged in communal conversation (Bawden & Robinson, 2000, p. 56).

Like the air conditioner in the South or newspapers in coffee shops, many experts feel the Internet has caused people to become “socially isolated” and keeps us from maintaining traditional relationships (Kraut et al., 1998, p.1017). Putnam (1995) claims the parallel effects of the Internet are beginning to happen,

as people are not socializing, going to church as much, and are having less overall civil engagements (p. 4). He has found that communities operate better when people interact with each other in regular social interaction (Putnam, 1995, p. 2). On the contrary, some claim the Internet has offered us the ability to create and maintain strong relationships to anyone, anywhere. Distance is no longer an issue; “time and space do not matter” (Kraut et al., 1998, p. 1019).

The Internet has opened the door to a new world of social involvement as well as the creation of a new kind of community, that of an online community. Social networks have exploded over the past few years, and as they evolve, they show no sign of slowing down. People, because of the Internet, can now reconnect with friends and family they haven’t seen in years, visit with people across the world by email, instant message, and even see video of them in real time with software such as Skype. This does not suggest a world is being created of socially isolated people, as that claim could be applied to any technology that draws people away from physical social activities. What it does propose is the idea that new types of online social activities and communities are being formed, giving us the opportunity to interact with others, just in a different way.

The Radio and the Internet

When a new technology is created, there are also the expectations that come with them. Craig (as cited in Lyons,1966) writes of the overwhelming positive implications the radio would offer not only American society, but to the world as well. “Radio would bring education to the masses, as millions could now

tune in to programs devoted to scientific and cultural education. Radio would be the most effective antidote to illiteracy yet devised. The new medium might even provide the necessary impetus towards world peace after the war to end all wars" (Craig, 2008, p.133).

> It was assumed that entertainment would abound, as people in rural areas will be able to enjoy the symphony orchestra in their homes, once a luxury only available to those who lived in the city. There was a hope that all citizens would become more educated in national civics, as all areas of the political arena would be obtainable to everyone in the nation. Likewise, immigrants would be able to assimilate to American life faster. There was anticipation that life in general would be more exciting for the homemaker, and the rural youth will be stimulated beyond the doldrums of farm life (Craig 2008 p.133 as cited in Gates 1941, p.11; Frederick, 1922, p. 28; Cohen, 1990, p.129-143).

As with the radio, the Internet was met with great expectations as well. In 1995, Nicholas Negroponte predicted:

> Bits are not edible; in that sense they cannot stop hunger. Computers are not moral; they cannot resolve complex issues like the rights of life and death. But being digital, nevertheless, does give much cause for optimism. Like a force of nature, the digital age cannot be denied or stopped. It has four very powerful qualities that will result in its ultimate triumph: decentralizing, globalizing, harmonizing and empowering...The information superhighway may be mostly hype today, but is an understatement about

> tomorrow. It will exist beyond people's wildest predictions (Quitney-Anderson, 2005, p. 13).

Though many of these predictions have come to fruition, we have yet to see the full impact of the Internet on modern society.

The Internet, like the radio, was initially intended to be a free exchange of information for everyone. Not free as in no-cost, but free for everyone everywhere that has access to it, to use, share, learn, and grow from it. Perhaps the biggest advocate for freedom of the Internet is Richard Stallman. He has dedicated his life's work to ensure the Internet freedoms he feels everyone has the right to. He created the GNU project, made mostly of volunteers, who created an operating system that offers total access on every level so anyone can add to it, build on it, and learn from it to facilitate improvement in every possible way (Stallman, 2010). Unfortunately, big companies fight the genuine ideals of Stallman and his struggle will continue so long as the Internet exists. Not everyone feels as the supporters of the GNU project do, which creates a conflict between those who want to use the Internet for profit and for those who want it to continue to have the same freedoms.

Net neutrality is a principle that Internet Service Providers (ISP) should charge everyone equally and not base charges on the type of services customers use the Internet for. In other words, everyone is charged for Internet services and what users download should not affect the cost of the service. Net neutrality advocates for Internet freedoms so Internet Service Providers cannot block websites, content, or control what kind of devices you attach to it, such as

wireless routers. Lessig (2001), in an article about the fear of the loss of net neutrality states, “Under the guise of protecting private property, a series of new laws and regulations are dismantling the very architecture that made the Internet a framework for global innovation” (p. 1).

As history has shown, change in inevitable. Shirky (2009) wrote an article comparing this time in history to that of life in the 1500s when history was drastically changed forever by the printing press. He reminds us of how the printing press model took centuries to play out before the resulting effects could be seen. Today, experts feel effects of the Internet have begun and as Shirky comparatively suggests, we may not be able to control this event; moreover, there may be no new paradigm that will fix the perceived problem. In other words, there may be nothing we can do, and like the people in 1500, we’ll have to ride it out and see what happens, because we cannot prevent, change, shape, control, or predict the future of technology (Shirky, 2009). A range of short-term effects of the Internet is already obvious and because of it, we live differently. As an example, a large majority of Internet users spend time participating in some kind of online community, such as a social network like Facebook or as a contributor to an online forum. We have seen a drastic downward spiral in newspaper subscriptions, and possible demise of the newspaper, due to news stories now being found online. Information and answers to questions are located on the Internet in milliseconds and our expectations of information are different, as we now demand instant gratification where as before the Internet, patience in the library was necessary. As many short-term effects are already evident, long-

term effects have yet to be seen. However, as history has taught us, the impact of a technology as enormous as the Internet is certain to change life as we know it.

CHAPTER 3

ACQUIRING ONLINE INFORMATION TODAY

Acquiring information is different today than it was just fifteen years ago. When doing research in the past, extensive visits to the library to access books, journals and encyclopedias involved hours of searching stacks and shelves. Today, a great percentage of that information, that was once only tangible, is now located in minutes on the Internet. In the 1997 book called *Digital Literacy,* Paul Gilster explains the unprecedented speed in which the Internet has taken hold. He predicts that the importance of digital literacy will be as important as having a driver's license. Gilster goes on to say, "The Internet is the fastest growing medium in history – like it or not, it will affect you and those around you at home and on the job, from the merging of your television set's images with network data to the emergence of communities of users whose activities will change the shape of commerce and education" (Gilster, 1997, p. 2). Fourteen years after this book was published, his predictions have come to fruition in such things as powerful search engines, social networking sites, distant learning classrooms, and the continual growth of online shopping. An explanation of the Internet is described by Hannemyr (2003) as he states, "the adoption rate of the Internet has exceeded that of earlier mass communication technologies by several magnitudes" (Hoffman, Novak, & Venkatesh, 2004, p. 2).

Search engines, such as Google, provide us with software that uses complex algorithms to locate information from servers around the world.

Wikipedia, which has arguably replaced the old encyclopedia, is an information resource on the web that is free to use, where open source practices allow information to be added and edited by anyone who has access to the Internet. Now with the growing popularity of smart phones, people are able to be constantly connected to the Internet and the devices put all available information at our fingertips to be accessed instantly day or night.

Information Overload

Current research explores Internet tools and how they are being used as well as the effects on its users. Today, due to the Internet, there are thousands of outside influencers that determine how we act and make decisions. As researchers consider Google, many opinions avail as we try to determine the early outcome of its effects. In a 2008 article titled "*Is Google Making Us Stupid?",* Carr (2008) observes how the Internet and Google gives us a type of information overload, causing the brain to reconfigure the memory (p. 57). His personal experience is that our ability to remain focused on long passages of text has been altered due to the "staccato" presentation of information on the Internet (p.58). Carr has noticed his concentration begins to waver after just a few pages of text and deep reading now requires great effort (p.58). He states, "Once I was a scuba diver in the sea of words. Now I zip along the surface like a guy on a jet ski" (p.57). In a focus group conducted with students and their use of Google, one student commented how Google was the first place they looked for

information because it was so available, but they also realized it may not always the best choice in the search for information (Head & Eisenberg, 2011, p. 9).

Heavy Internet users have a new array of psychological diseases associated to the Internet, such as Internet addiction and information fatigue syndrome (Palfrey, 2008, p. 186). Being constantly connected, these users are often desensitized to certain media as a guard against information overload and have symptoms of what is known as “technostress”, which hinders decision making in some situations (Palfrey, 2008, p. 189,190,192). Effects of the Internet have manufactured new rituals among heavy users and initiated behavior changes (Hoffman et al., 2004, p. 7). To many people, the Internet has become indispensable and is their primary connection to the world. Concerns of unpleasant effects due to the Internet are understandable, but the Internet will affect people differently, depending on how this technology is used in their lives.

New Paradigms

Information overload may also have the ability to be beneficial to us. Instead of harming our ability to think, we could be phasing into a new mental paradigm where a new set of skills will permit “fluid intelligence,” allowing us to skillfully sift through this sea of information and “find meaning in confusion and to solve new problems, independent of acquired knowledge” (Cascio, 2009, p. 95). Casio (2009) predicts, “The trouble isn’t that we have too much information at our fingertips, but that our tools for managing it are still in their infancy” (p. 95).

The explosion of information is due in part to the Internet being a facilitator for the addition of information by anyone who has access to the web. Internet freedoms benefit us as we build on each other's knowledge and are personally challenged from new information or developing technologies. However, this liberty has bombarded the Internet with innumerable websites, blogs, articles, and sites that aggregate information from all over the web. Stoll (1995) reminds us that the Internet "has become a wasteland of unfiltered data" (p.1). Whether unfiltered data is seen as a wasteland or as an opportunity of freedom of speech or expression, it is up to the user to filter, intelligently understand, and analyze the information. If Casio is correct in his prediction of our minds' developing information management tools, we should continually get better at intelligently filtering information on the Internet.

One of the Internet's greatest examples of how the Internet community contributes to the sharing of knowledge is Wikipedia. Wikipedia's originator, Jimmy Wales, wanted to create an online encyclopedia where contributors could add or edit information from anywhere in the world (Voss, 2005, p. 1). Today, Wikipedia has over 3,600,000 articles in English alone and is available in dozens of languages. Every year, more than a third of Americans read Wikipedia and it ranks in the top ten of most visited websites in the world (Murray & J. C. Miller, 2010, p. 638). In a 2010 survey, 9 out of 10 people claim to use Wikipedia for "everyday life research" (Head & Eisenberg, 2011, p. 9). Because Wikipedia is created and edited by the Internet community, it is susceptible to errors, intentional or not, making it more open to scrutiny. An experiment conducted by

the highly-touted scientific journal *Nature* found the average Wikipedia entry had approximately 4 errors compared to 3 per Encyclopedia Britannica article (Palfrey, 2008, p. 159). Even with documentation that Wikipedia is comparatively as accurate as the Encyclopedia Britannica, it still eludes the honor of being considered a legitimate source (Murray & J. C. Miller, 2010, p. 641,638).

The way we access the Internet is changing as well. “The smartphone revolution has moved the Web from our desks to our pockets” (O’Reilly & Battelle, 2011, p. 1). Not only are we contending with information overload, but we can access the overload from nearly any location at any time. Conveniently, we no longer have to type in our request into smartphones, but simply speak the command and the application will retrieve the information for us. Many smartphones are now sensor-based, with luxury functions such as location recognition, GPS, barcode scanning, and much more. OReilly (2011) states, “The new direction for the Web, its collision course with the physical world, opens enormous new possibilities for business, and enormous new possibilities to make a difference on the world’s most pressing problems” (p. 10).

As digital technologies continue to improve and our insatiable lust for the latest gadget consumes us, we find ourselves becoming more and more dependent on them. For example, if our cell phone is left at home or our Internet service is shutdown, some people experience distressing emotions such as isolation and disconnect from the world. This reaction may have been present to some extent prior to cell phones and Internet when a landline telephone or

television was not working, but due to the constant connectivity we have with cell phones and the Internet, this reaction is justifiably compounded.

Digital Natives and Internet Usage

A digital divide, or an unequal balance in someone's ability to access the Internet, exists not just in America, but all around the world. The divide is not just a geographic or economic issue, but for a time, is age-related as well. Fear of computers and the misunderstanding of the Internet is a reality for many older people. The older generation have become what Palfrey and Gasser (2008) call "Digital Immigrants", the selection of the population that have learned to use email and other Internet functions much later in life, where "Digital Natives" were born in the 1980s and have never known a world without the Internet (p. 4). Today, it is more likely that a twelve-year-old child is much more techno-savvy than his seventy-year-old grandparent. In the near future, we will experience a time where there is no longer an age-related digital divide and everyone will be considered to be a Digital Native. It is reasonable to assume that when this time arrives, statistics on Internet users will become more evenly distributed among most age groups.

Currently, the largest demographic of Internet users are Digital Natives, ages 18-29 (Rainie, 2010, p. 4). The way traditional college students have used the Internet over the past few years has changed as well. Hoffman (2004) states the Internet has not only broadened college students' school experience, but has become an essential part of all areas of academia, as well as their social life (p.

3). In comparing a Pew study in 2002 to a Pew study done in 2010 several major changes have taken place. In the earlier study, college students used the Internet for "four or more hours per week" (Jones, Johnson-Yale, Millermaier, & Perez, 2009, p. 1). However, Jones (2009) reports just three years later, over half the students surveyed reported being online over three hours per day (p. 7). Not only has time spent online changed, but so has the reasons for being online. In 2002, less than half the college students surveyed used the Internet for social communication and only 10 percent used it for entertainment (Head & Eisenberg, 2011, p. 3). However, Head & Eisenberg (2011) report a significant jump in 2005 to 28 percent of students using the Internet for entertainment, while email use had declined due to social media sites such as "Facebook and YouTube" (p.3).

As students' time spent on the Internet has increased over the years, their needs have evolved as well. In 2002, most students used the Internet for email communication and general web-surfing (Jones, Johnson-Yale, Millermaier, & Perez, 2009, p. 2). However, today's students are still using email as a form of online communication, but now students are heavily involved in communicating via social networking sites such as Facebook (Jones, Johnson-Yale, Millermaier, & Perez, 2009, p. 8). Jones (2009) also reports college students are the web's most numerous and active bloggers, updating their blogs more often than the general blogging population (p. 8). The student population is more likely than general web users to try new things such as online auctions (eBay) and gambling, and students are the web's largest viewers of pornography (Jones, Johnson-Yale, Millermaier, & Perez, 2009, p. 11).

With the tremendous amount of time spent online and the active participation in sites that provide personal information, such as Facebook, and the use of sites that require financial information, such as ebay, the Digital Native offers what the Digital Immigrant might term “too much” personal data to the world of Internet users. Any person, student or not, that uses the Internet has some level of concern about personal privacy and web-related privacy issues. Initially, it was thought that college students had a lower concern for online privacy issues. Palfrey and Gasser (2008) suggest that Digital Natives have less concern about privacy issues and the consequences that may follow their sharing of “too much” information (p. 53, 54). However, a 2009 survey shows that young adults have similar attitudes in the area of privacy as older adults (Hoofnagle, King, Li, & Turow, 2010, p. 3). Yet, the same survey points out that young adults are more easily swayed by peer pressure, stating “the benefits of looking cool to peers may outweigh concerns about negative consequences” (Hoofnagle et al., 2010, p. 5). Findings also revealed that eighteen-to-twenty-four-year-olds have an unrealistic view of the way the law protects them online, which might explain their apparent nonchalant approach to Internet privacy (Hoofnagle et al., 2010, p. 4).

Internet usage will continue to change as years pass and new technologies will be created for the way we access the Internet or perhaps a technology will completely replace the Internet as we know it. New paradigms for accessing information are sure to develop; and this is not necessarily a bad place to be, just different (Shirky, 2009). Soon, everyone will be a Digital Native and will

have never known a world without the Internet. Societal changes will continue to unfold as this generation is presumed to take the Internet and latest technologies to the next level.

CHAPTER 4

ACQUIRING HEALTH INFORMATION TODAY

The Internet has afforded us the opportunity to explore, learn and share information like never before. Nearly any topic imaginable can be “Googled” and some kind of search result will appear. This is a great advantage to us as users, having a simple way to become more knowledgeable on topics that are particularly interesting to us. Having access to new information on health care for instance, can be instrumental to our physical as well as mental health. Today, because of the Internet, the expansive knowledge of healthcare is at our fingertips (Rice, 2006, p. 1). However, research statistics indicate online searching of health information falls just behind asking a friend or family member, but third to consulting a physician (Fox & Sydney Jones, 2009, p. 4).

Growing Internet Usage for Health Information

Since the 1990s, Internet usage has continued to grow every year at a phenomenal rate. Fox states on an average day, approximately 8 million people will go online for health information, and Google searches alone can supply the reader with millions of health documents (Drentea, Goldner, Cotten, & Hale, 2008, p. 511; J. M. Morahan-Martin, 2004, p. 498). Like many topics on the Internet, 85% of people surveyed reported using search engines when looking for health information online, the average “health seeker” searching two to five sites per specific topic (Ybarra & Suman, 2006, p. 34; Rice, 2006, p. 3). In 2004, from

all searches conducted on the Internet, 4.5% were health-related and women were found to be the largest demographic searching for health information for either themselves or their families (J. M. Morahan-Martin, 2004, p. 498; Rice, 2006, p. 37; Fox & Sydney Jones, 2009, p. 66).

A recent statistic on an online cancer information site, Oncolink, demonstrates the increased use of online health seeking. In 1994, the Oncolink site had approximately 30,000 visitors per month, but in 2004, hits to the site increased to over 9,000,000 per month (Gilmour, 2007, p.1271). This impressive statistic would allude to the fact that a large number of Internet users exist today; however, there still exists a socioeconomic digital divide that cannot be overlooked when researching online usage. Fox researched Internet users in 2005 finding 89% are college graduates, 61% are high school graduates and only 29% of those who did not graduate high school use the Internet (E. A. Miller & West, 2009, p. 275). The Internet users that did not graduate high school but use the internet may experience difficulty with comprehension of medical information or the more advanced reading skills necessary to interpret scholarly written medical information (E. A. Miller & West, 2009, p. 275).

The Informed Patient

Today's society seems to be constantly looking for facts that give them instant gratification, and health care is not an area exempt from this line of thinking. Ybarra and Suman (2006) claim "health-related websites have a powerful influence on the attitudes and behavior of people" (p.1). Pro-active

health information seekers often turn to the Internet for instant answers to problems, conditions, symptoms, etc. instead of waiting until they can visit their physicians (Hu & Shyam Sundar, 2009, p. 2). After information is satisfactorily located online, people report being reassured, even calmed by the information found as well as reporting lower anxiety due to increased knowledge on a particular subject (Hu & Shyam Sundar, p. 2; Ybarra & Suman, 2006, p.1). The Internet also provides health information seven days a week, 24 hours a day, with the additional benefit of total anonymity (Gilmour, 2007, p. 1271).

Today, patients go to their physicians already armed with an arsenal of online information about their conditions. Research shows most people deduce online health information as trustworthy, accurate, and important (J. M. Morahan-Martin, 2004, p. 500). Online health-seekers felt more comfortable and prepared to ask questions at their doctor visits, often feeling “empowered” by their newfound knowledge (Hu & Shyam Sundar, 2009, p. 2; Tustin, 2010, p. 4). Yet, are physicians as excited about all the information found online? Reports find that doctors consulting with patients who have already found information online prior to their appointments find this “burdensome” and other physicians have been reported being reluctant to discuss information found online (Tustin, 2010, p. 4; Gilmour, 2007, p. 1272). An editorial in a British journal uncovered the lack of confidence physicians felt when consulting patients that had done previous online research (Gilmour, 2007, p. 1272). This is simply because individuals can research a particular condition for hours, searching deeper than any physician would have the time to do as they must be learned on an endless array of topics

(Gilmour, 2007,p. 1272). On the contrary, patients do not seem to find physicians under-informed and often do not discuss information found online so they do not undermine the role of the physician, but instead use the information to "complement" the patient/physician relationship (Koch-Weser, Bradshaw, Gualtieri, & Gallagher, 2010, p. 280).

Understandably, information found on the Internet, being unregulated, cannot always be considered a reliable source; and sifting fact from fiction is often a difficult process. Erdem (2010) calls people who go online to find health information "cyberchondriacs", and admits that online information can be inaccurate (p. 24,25). However, when the average doctor spends only eight minutes per office visit, it is not unexpected to find patients continuing to search for more information to fill the existing void (Tustin, 2010, p. 5; J. M. Morahan-Martin, 2004, p. 503). Using the Internet for supplemental information is an excellent way to research a health-related topic, but it should not be used as the main source of information for patients (Tustin, 2010, p. 14). It is important for physicians to realize today's growing number of Internet-savvy patients will seek information online, and doctors' supplying patients with reliable sites to further their knowledge on a topic would be advantageous (Ybarra & Suman, 2006, p. 40; J. M. Morahan-Martin, 2004, p. 506). This may help in the direction of accurate health information, as nearly 3% of adults claim harm has come to someone they know after they utilized inaccurate health information found on the internet (Fox & Sydney Jones, 2009, p. 7). Understanding Internet trends in the area of health information seeking is vital to today's providers to assist and

communicate with patients who are informed, whether accurately or inaccurately, from online information (Mcinnes, Gifford, Kazis, & Wagner, 2010, p. 60).

Online Health Information and the College Student

One demographic that does have adequate access to the Internet is that of today's college student. Most universities today have 24-hour computer labs, making Internet access available anytime to a population with unique varying schedules (Gordon, Juang, & Syed, 2007, p. 674). Cotton and Jelenewicz state 97% of college students report being online several times per day, which indicates a very narrow digital divide on college campuses (Jones, Johnson-Yale, Millermaier, & Pérez, 2009, p. 244,245). Research has shown "college-aged users differ from others in terms of how they use the Internet and their behavior and attitudes online" (J. Morahan-Martin, 2000, p. 28). Male students are reported to use the Internet more for entertainment whereas female students find its social and education uses more appealing (Steve Jones, Johnson-Yale, Millermaier, & Pérez, 2009, p. 259). Undergraduates use the Internet for entertainment and news more than television, and college students are found to be the Internet's heaviest users, being online an average of 4.4 hours per day (Ogan, Ozakca, & Groshek, 2007, p. 171,172).

Because college students are so familiar with the Internet and its capabilities to inform, it is not surprising that they would also use it for their health questions or concerns. It is not unusual for people of any age to go online searching for health information that could have a negative or embarrassing

stigma connected with it (J. M. Morahan-Martin, 2004, p. 498). College students frequently face many health issues that some feel may have a negative association, such as birth control, sexually transmitted diseases, sexual orientation, sexual assault, anxiety or weight gain. It is realistic to assume that students would privately search online for health information on numerous health topics that would be difficult or embarrassing to discuss with friends, family or healthcare providers. A recent survey among undergraduate students found that 94% of the students looking up health information had used Google to search for the answer to more sensitive sexual questions (Buhi et al., 2009, p. 105). Second to Google was the use of Wikipedia as a resource tool, which most students surveyed, considered the information retrieved to be accurate and often looked no further (Buhi et al., 2009, p. 106). When looking for health information, students stated that websites ending in .org or .gov were normally considered to be trustworthy (Buhi et al., 2009, p. 107).

Dutta-bergman (2004) explains the Media Complementarity Theory as the use of a mixture of media to fully fulfill one's needs, each media complementing the other (Fries, 2010, p. 13). In the context of health information, Fries (2010) suggests that students will supplement online health information with other traditional means of fact finding (p. 48). College-age students generally are a healthy population and feel less threatened by health issues, yet a reported 75% of young people have searched health issues online (Fries, 2010, p. 41; Buhi, Daley, Fuhrmann, & Smith, 2009, p. 101). Due to a student's accessibility to the Internet, searching for online health information should continue to rise, whether

it is for serious health information topics such as chronic diseases or simply ways of promoting good health, such as diet and exercise (Koch-Weser et al., 2010, p. 279, 290).

As college students begin to find their independence, they are often lost when it comes to healthcare decisions, making health care appointments or self-assessing an illness. Many students, away from home for the first time, find their first self-reliant visit to a doctor's office will be at the university's student health services (Nicoteri & Arnold, 2005, p. 412). Students often come for services for minor ailments that did not require medical treatment, because most students have never been taught "self-interventions" (Nicoteri & Arnold, 2005, p. 414). Local health information and resources seem more difficult for students to find in a Google search (Buhi et al., 2009, p. 110). Therefore, it is crucial for a university's health service to have a user-friendly website that is thorough in both local and general information, to give direction and reliable information to students.

CHAPTER 5

SOCIAL MEDIA – AN ONLINE STUDY

Social media and networking are an enormous part of the college student experience today. Can healthcare facilities take advantage of social media, or does the transparency of social media go against the privacy concerns and sensitive issues surrounding healthcare? The heart behind the social networking phenomena is the idea of "peer-to-peer communication," a conversation between two friends (Pempek, Yermolayeva, & Calvert, 2009, p. 236). When businesses or other agencies are thrown into the mix, are the ideals of social media's origin upheld? Social media are changing the way we communicate with each other, and perhaps due to its infancy, accurate guidance cannot yet be given to those who wish to use it for reasons not fitting to its original purpose.

Social Media and Networking

Social media are a means for anyone to share information to an expansive audience. Online social media are the way to transmit an online communication, using Web technology, to connect users anywhere in the world who have access to the Internet. This communication can include dialog, photos, videos, music, or any form of content used for personal interaction. Social network sites (SNS) are described as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of

connections and those made by others within the system," as a way to emphasize pre-existing relationships (Boyd & Ellison, 2007, p. 211). SixDegrees.com, was the first acknowledged social networking site in 1997 and since then, hundreds of SNS have been created (Boyd & Ellison, 2007, p. 214). Today, Facebook, Twitter, YouTube, and Foursquare are the forerunners in the social networking world. They all serve a slightly different purpose for social networkers as Facebook and Twitter serve more as a microblog, while YouTube displays user videos and Foursquare is used to coordinate meet-ups. The commonality between each network is they are all individual online communities that allow anyone to join, participate, and share content for free.

Social Media and Healthcare

Businesses and organizations are jumping on the bandwagon, as many appear to be groping for an opportunity to profit from social networking. This is accurate for the healthcare field as well. Hospitals, local health departments as well as university health centers, etc., are dabbling in social media as a marketing or outreach tool. The true intent, which is that of having a natural conversation, seems to be a grey area for businesses as it can be something of a threat to the business. Some institutions have been known to screen answers, deleting comments that may be detrimental to their business or having others purposely create a string of good comments to bury the bad ones (B. Alongi, personal conversation, August, 2011). Such acts appear to pollute the attraction and principle of social media. With today's Internet-savvy user, deleting

comments or covering bad ones is usually noticed and will only add “insult to injury” (Ramsay, 2010, p. 258). Healthcare providers should question if this is the right way to serve their patients, as conveying truth and honesty should be an important characteristic and concern for healthcare providers.

Due to privacy and the somewhat sensitive topics related to healthcare, it seems reasonable to assume patients would not tweet they were at the doctor’s office, not ‘Like’ a medical facility on Facebook, or check in on Foursquare. In the article, “*Take Two Aspirin And Tweet Me In the Morning,”* author Carleen Hawn (2009) states social networks today give healthcare facilities a new outlet for reaching patients (p. 362). Marketing gurus seem to think social media is a huge opportunity for healthcare providers. However, recent research shows that “while offline conversation about health information may be robust, it seems that the online conversation about health may be lopsided. There are many more readers and listeners than there are writers and creators of online content” (Fox & Sydney Jones, 2009, p. 23). This indicates people are likely to search online for health-related content, but be hesitant to Tweet or discuss it in a forum. Yet Fox and Jones (2009) make the point that “healthcare does not happen in a social vacuum” (p. 5). When a student has a health concern, it is likely he will talk with friends and family about it, therefore becoming a social aspect of his life. When students are confident in their offline social lives, they are more likely to be more “extroverted” in socializing online (Liu & LaRose, 2008, p. 316). It may be a personality issue as well as a privacy issue that students do not associate healthcare facilities with online social networking. It is logical to assume that

people set self-imposed boundaries when it comes to being open with health issues, questions, or conversations.

An Online Survey – Facebook and Twitter at the Health Center

Online research was completed on 30 major universities across the United States that have student health services, to see how many health centers utilized Facebook and Twitter for outreach purposes. Nineteen of the universities' health centers did not have exclusive Facebook pages or Twitter links. For those health centers that did have Facebook pages, the average amount of "Likes" was 539. Of the schools selected for research, the largest amount of Facebook "Likes" was the University of Texas at Austin at 970. However, they were currently running a campaign awarding students water bottles if they would "Like" their Facebook page. Most health centers that had Facebook pages, especially those with the larger number of followers, posted frequently, sometimes daily. The University of Southern Indiana's health service had only 77 followers, but rarely posted any kind of message on their Facebook page, suggesting that a lack of interaction leads to a lack of followers.

A comparison of health center "Likes" to its university's main Facebook page reveals interesting results. University health centers averaged only a few hundred "Likes" where as the university's main Facebook pages ranged from hundreds to hundreds of thousands, the largest being well over 350,000. There are many reasons universities' main Facebook pages would have more "Likes" as they would have such followers as students, faculty, staff, alumni, and

university supporters within their state. There is a pride and loyalty connection students and the university community have with their local university, therefore supporting their Facebook page seems like a more natural fit. It is a way for students and others to support the school and communicate with each other online. However, in a university of 20,000 students and even larger number after including the number of faculty and staff, low numbers of Facebook “Likes” for the health center shows an apparent lack of interest or need to connect. Low interest, which was consistent in all health centers surveyed, could lead one to hypothesize the health center is not a good fit for social networks.

Twitter usage with campus student health services was even lower than Facebook. Of the eleven centers that did have a Facebook page, eight did not have a Twitter page, leaving only three of the thirty researched schools showing the utilization of Twitter. The University of California at Berkeley’s health service had 195 Twitter followers, the University of New Hampshire had 988 and the University of Florida showed only 38 Twitter followers.

The university health center used for the subsequent case study was not included in the thirty schools researched, but had 304 Facebook “Likes” and 36 Twitter followers respectively. However, it receives an average of 3,000 website hits per month. With this information, it is safe to presume the 30 universities researched have far greater hits on their websites than they do on their social networking sites. Does this mean health centers should abandon their social media campaigns? Wang stresses the importance of using “cross-media integration” in promotion marketing techniques as different types of media

surround us on many levels throughout the day (Wang, 2007, p. 34). Using more than one form of media enhances the users experience. Calder and Malthouse (2005) agree that using multiple media techniques caters to the consumers needs and sends a positive message (Wang, 2007, p. 35). Wouters and Wetzels (2006) found that using cross-media integration for marketing brand awareness creates a “recall effect” suggesting consumers remember brands more readily when they have seen campaigns in more than one form of media (Wang, 2007, p. 35).

The Future of Social Media and Healthcare

The act of engaging in social networks has exploded in recent years and is expected to continue increasing. As college students are constantly connected, either by computer, tablet, or mobile device, their lives revolve around and evolve with their online communities. Keeping up with swiftly changing social networks poses a challenge for the health center; however attempting to reach students with health messages will likely be enhanced by utilizing social media if they are used wisely. For university health services, websites remain the dominant online resource and should be the focal point of online health information. However, social networks should be considered as a viable outreach tool for today’s Internet-savvy students.

With social media, a commitment to constant maintenance and open communication will be a major factor. Keeping abreast of new social networks should not be difficult, but knowing when to implement that network will be the

challenge. For the health service, to participate in every social network would be impossible. The manpower it takes to continually maintain and contribute to social networking sites would have to be evaluated. Realistically, two or three of the most popular social networking sites could easily be maintained and managed, making sense to maintain a few sites well instead of having a poorly-managed presence on numerous sites.

Due to the dramatic increase in social media and networks over the past few years, it is likely to play a more central role in university health promotion in the near future. Knowing how to manage sensitive conversations, inappropriate comments and negative feedback will be fundamental. If negative comments are deleted or buried, then social media are not being used for its original purpose and could be seen as being used for “patient testimonials” instead of conversations with patients. Perhaps as time goes on, a new paradigm for businesses and organizations will arise where networking with a business will be natural and welcome, but comes with the understanding that conversations and relationships are very different than those with friends on a social level.

CHAPTER 6

STUDENT SURVEY RESULTS

In anticipation of restructuring a large mid-western university's health center website, eight current students of this university were surveyed with general questions about how they find health information and were asked to navigate the health center's website in order to see how easy or difficult it was for them to find information. The intent of the survey was to verify areas on the current website that were already assumed to be a problem, to get their perspective on content and appearance of the current website, to see how this particular university's students were acquiring their health information and to see how many of them were active in social networking sites.

Health Acquisition Questions

The students in the survey were asked, when having a health-related concern, where is the first place they would go for information. The answers were equally divided as four of the students stated they would go online first, while the other four students said they consult with friends or family first. Going to the doctor was the second choice for three of the students. When the question was posed to students if they have ever gone online for health information, the answer was a unanimous "yes". Then when asked more specifically if they had been to the health center's website, three stated they had, while the larger percentage of the group had not visited the site. For those students who had

visited the health center's website, it was in search of the hours of operation, phone numbers and general information on what services were offered to them as students.

Navigation

In general, if it takes a visitor more than a minute to find the answer to an online search within a website, they typically become frustrated and move on to another website or information source. Therefore, it is important to examine the website to see how navigation to difficult-to-find items or topics could be improved. In the survey given to the students, eight questions were asked that required the student to navigate the health center's website in order to answer the given question. Of the eight questions, three of the questions took the majority of the group longer than thirty seconds to find, often with the participant giving up the search, frustrated. The majority of the participants answered the basic search questions quickly, such as health center's hours of operation, phone numbers, and how to contact the center by both phone and email.

Word Association

Students had a more difficult time finding sections of the website that were poorly named or if the students had to associate information with one word. As an example, when asked to locate the page that contained information about outside health agencies, such as area hospitals, the women's center, and local AA meetings, students were not associating the given locations with the term

“resources.” Participants searched the health topics dropdown most frequently, and then looked under the event calendar and even the Facebook link. Other problems arose when information fliers were several clicks away from the home page or located under poorly-named links. When students were asked to find information on a workshop about safe tattooing, over half the students ended up clicking on the workshops’ link on the wellness site, which was correct, but because the information for the tattoo workshop was under another link titled “presentation schedule” the students clicked off the wellness center and kept looking. Students stated they considered important links below the fold to be “less important” and were frequently not seen or thought to be a part of the university’s main site, not the health center’s site. In the instances in which the students had difficulty finding information, the majority of students gave up searching and stated that if they had been searching for this information on their own, they would have given up and left the health center’s site to “Google it” instead.

Aesthetics and Graphic Design

When asking general questions about the appearance and functions of the health center’s website, students commented how it was generally easy to navigate and could see great effort had been put into making information available to them as students. Most participants found the information on the site easy to find, but searching through the site took some time because of the vast amount of information, making quick searches somewhat more difficult. As far as

appearance, students observed the “buttons” on the home page as the most important information and the other links as being secondary in importance. The majority of students liked the buttons and noted how they gave good direction, making viewers realize all the services at the health center; however, other remarks concerning the buttons were negative stating the buttons were distracting and somewhat “playful” and awkward, with one student stating it could make the site seem unprofessional. Another common complaint was, even though the site was good, the fact that it was smaller than their computer’s screen resolution made it seem like an older website.

Areas for Improvement

Students’ overall experience of the health center’s website was positive, but not perfect. No comments were given when asked if there was more information they would like to see added to the site. The suggestions for improvement were to add more photographs, make the site a larger screen resolution, keep important links above the fold, improve naming conventions, add a search bar, and make clicks to important information as few as possible. Only one student felt the site may be untrustworthy, but it was due to the design of the site and buttons, not because of the content found within the site. Surprisingly, no comments were made by the students on their desire to see more video or games on the site, as a large amount of college students’ time is spent using the Internet for entertainment purposes. However, when asked if students would participate in online quizzes, three students said no and the other five said yes,

but only if it was a pop up, very visible or was a topic that they found particularly interesting.

Social Media

The final two questions posed to students were questions about social networks. When asked if they had accounts on Facebook, all eight students responded “yes.” When asking the students whether they would have any reason to “Like” the health center’s Facebook page, the answers were equally split. Of the eight students surveyed, four of them said no, they would not “Like” the health center’s Facebook page, mostly because they were particular with their “Likes” and some students didn’t “Like” any other Facebook pages. The students did comment that they would still periodically visit the health center’s Facebook page to see what events were happening. Of the remaining four students who said they would “Like” the Facebook page, was because they also “Liked” other university affiliated institutions and would do it out of loyalty to their university. One student commented that as a freshman, he attended a wellness workshop that truly inspired him, so he would choose to “Like” the health center’s Facebook page to stay abreast of upcoming workshops. The students who stated they would ‘Like’ the page doubted they would ever “Like” any other health institutions, such as the Centers for Disease Control (CDC), unless they were affiliated with them in some way.

CHAPTER 7

WEBSITE REDESIGN – A CASE STUDY

When a developer is creating a new website from an existing one, many areas must be researched before construction of a new site can begin. The original site must be explored to see what elements are working for the site and locate the areas that are causing the site to be ineffective. Information that is outdated, inactive links, or links that no longer work need to be removed. If new information is to be added, the website should be examined to see where that information can be logically incorporated. Other areas such as a breakdown of the target audience into specific personas will aid in how the website should look, what the language of the site should be, i.e. whether youthful and fun or serious and institutional, and the type of information that should be added such as photographs, graphs, video, games, links, and blogs. Lastly, if creating a website for a business or corporation, the company may have certain restrictions or parameters that must be followed. When creating the website for this case study, these areas were thoroughly examined prior to site reconstruction.

It is important to know who your audience is. In this situation, the project is a redesign of university health center's website. As with any site, web traffic can essentially be anyone with Internet access. However, this particular project website has a fairly diverse target audience with current college students being its largest population of web traffic, followed by university staff, parents of current

students, the surrounding university community, other universities, and potential students as being some possibilities of a secondary target audience.

Personas

Personas were created to aid in the development of the health center website. A persona is the development of a fictional person to aid in creation of a design that will have multiple users, giving the creator a better understanding of what may be the attitudes, lifestyles and abilities of potential customers/users. The purpose of this marketing tool is to help predict the type of person that will, in the case of this project, be visiting a website. The use of personas does have its critics, as this information cannot be verified and assumptions are made about these fictional characters (Faily & Flechais, 2010, p. 2). However the usefulness in creating personas helps the developer better understand the consumer by putting a face and personality to the user.

The first persona is that of a university student, who is our primary target audience. Natasha is a junior at the university studying psychology. She spends most of her day in class or studying, but also works at a department store and is involved in two Registered Student Organizations. She finds time to be with her friends but appreciates her quiet time alone. When shopping she buys mostly clothes. Daily, Natasha uses her laptop approximately seven hours for Internet research, web-surfing and for connecting to her Facebook page. She talks twenty minutes on her phone and spends forty minutes texting daily. She listens to her iPod three hours per day and watches only two hours of television. Natasha is

very comfortable with programs such as Word and Excel. She sends photos to her Facebook page via her phone and uploads images from her computer. She prefers being reached by text message and thinks she is a professional multi-tasker. Natasha would feel disconnected from the world if she had no access to the Internet.

The secondary users of the university health center website are the parents of current university students. This persona is Nancy, who is a mother of three and has one son at the university. She is a housewife but sells Mary Kay on the side. She lives on a farm and helps her husband with the usual chores. She prefers organic food and loves to cook. Nancy helps organize the local fair every year. Daily, Nancy spends about one hour on the computer, one hour talking on the phone and fifteen minutes texting. She watches about six hours of television and has no web access from her phone but has satellite as their Internet provider. Nancy visits websites for recipes, her business website and has a gmail account. Nancy uses the computer regularly, but only for surfng the web and checking her email. She does not do social networking and just recently was forced to text because of her kids' demands. Nancy still has a film camera and wants to learn how to work with digital images because of her love for scrapbooking, but is intimidated by computer programs necessary for photo manipulation. She relies on her younger sons to help her with any computer issues. Nancy talks with her son at the university two to three times per week by phone and daily by text or email. Nancy sings in the church choir and nothing is more important to her than her kids.

The tertiary user of the health center website is the university's faculty and staff. The third persona is Cal who has been a chemistry professor at the university for twenty-seven years. He has a countdown to his retirement date running continually on his computer. He has a passion for old Westerns and thinks he looks like John Wayne. He does not socialize outside the work place. He always wears a tie to work. Cal is on his computer approximately seven hours per day and his computer usage is for answering emails, reading the news and general web-surfing. Cal has no web access on his phone and has cable Internet service at home. Cal is ready to retire, but takes his job very seriously. He goes above and beyond the average professor when it comes to helping his students. He does not work in the summer and travels with his brother who is a photojournalist. He is about to become a grandfather and visits his daughter in Seattle once a year. Cal just got a Kindle for Christmas and likes it more than he thought he would. Cal is not afraid of the computer and follows tutorials when he needs to learn a new program. Cal feels it is hard to keep his students focused on what is important.

These personas help to steer the direction and creative process of the new website as we see many different personalities, ages and skill levels. With this project, focusing on the primary persona will be the basis for creation of the new site. As revealed with Natasha, we know she is web-savvy and would likely research the health center's website for information. She is active in all the current trends of her peers, is technically proficient, a big user of the Internet and social media, as well as uses her cell phone as a way to be constantly

connected. This indicates that our target audience is familiar with the web and should be able to navigate a good website with ease. The target audience is deeply engaged with their online community, due in part to the soaring use of social media, and has access to their email continuously. This information signifies the health center's website will be an essential resource for Natasha, but a way to reach her via social media and mobile device should remain open as a viable option as well.

Website Reorganization and Redesign

An in-depth study was pursued after taking information gathered from the student survey. Results were combined with the personas and requirements of the university and health center to assist in decisions on how the current website should be restructured to correct both stated and potential problems, yet fulfill the needs of the target audience and upper administration. Careful thought was put into finding the right platform to create the new website, taking into consideration all the options, limitations, and needs of the health center. The health center is part of a university with strict rules for use of logos, colors and graphic design, including the appearance and layout of university-affiliated websites. The health center itself has self-imposed expectations as well. The health center website has functional requirements to allow multiple administrators to update the site from any physical location with Internet capability. As an outreach tool, information needs to be easily updated to be current and keep students informed. Most importantly, the site needs to fill the needs and requirements of its target

audience, such as supplying accurate information about the health center and the departments within the center, emergency information, local resources as well as online resources, self-care information, current activities, student involvement, and basic contact information.

Examining the old navigation map exhibits twenty-four health center related options all accessible from the homepage whether in the form of a button, dropdown list or link (see Figure 1). From the homepage, it was necessary to click on a topic and go to that particular section of the website to see what other options were available under that selection (see Figure 2). For example, if you clicked on the medical button, you were taken to the health care section of the site where eleven of the health center's major services could be found. Six of these services are already represented as buttons on the homepage, and the other five options were found only in the health care section. The information was not impossible to find, but required more in-depth searching to locate it. However, vital information located in the medical section, such as Immunization Compliance and the Travel Clinic, could not be found from the button section of the homepage and was not necessarily associated with medical services by the site's users, making the search more difficult. The only option was to open and close each button in search of information needed.

In the current design, the buttons on the main page were found to be helpful to students surveyed, but they are somewhat misleading as they only show a few of the services at the health center. Many of these buttons are major players in the site as far as importance, but as an example, essential information

is located in the Resources section, which is not a button, but is a link (see Figure 2). The link to this section is the word Resources found below the fold on the lower right and in an area that was often misinterpreted by the students as being part of the footer. With that said, YouTube and Facebook each ranked a “button” and are far less important than the information found in the Resources section.

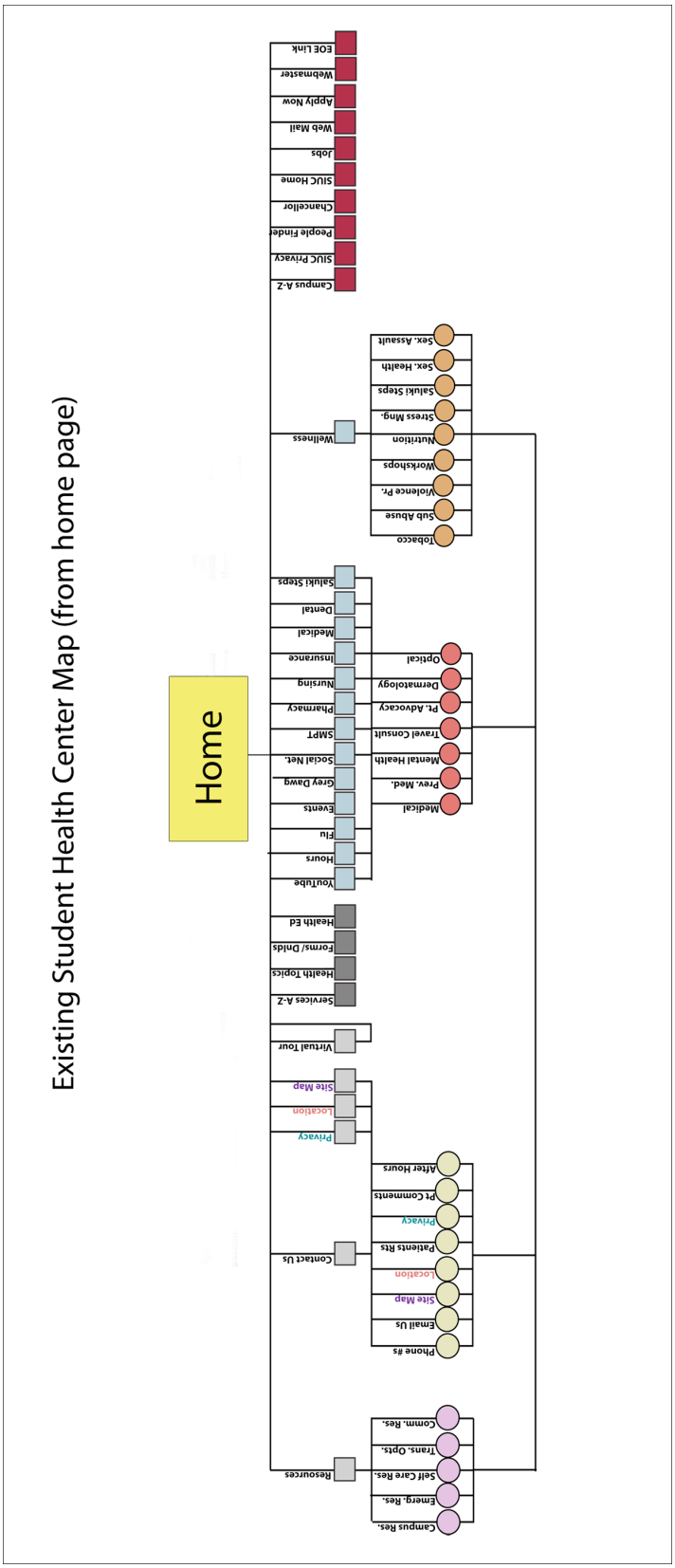
Existing Student Health Center Map (from home page)
Home
Campus A-Z
SIUC Privacy
People Finder
Chancellor
SIUC Home
Jobs
Web Mail
Apply Now
Webmaster
EOE Link
Wellness
Tobacco
Sub Abuse
Violence Pr.
Workshops
Nutrition
Stress Mng.
Salukl Steps
Sex. Health
Sex. Assault
Medical
Dental
Optical
Dermatology
Pt. Advocacy
Travel Consult
Mental Health
Prev. Med.
Salukl Steps
Dental
Medical
Insurance
Nursing
Pharmacy
SMPT
Social Net.
Grey Dawg
Events
Flu
Hours
YouTube
Health Ed
Forms/ Dnlds
Health Topics
Services A-Z
Virtual Tour
Site Map
Location
Privacy
Contact Us
Phone #s
Email Us
Site Map
Location
Patients Rts
Privacy
Pt Comments
After Hours
Resources
Campus Res.
Emerg. Res.
Self Care Res.
Trans. Opts.
Comm. Res.

Figure 1.

Figure 2. Original Website Homepage

In the new redesign, careful consideration was taken on how to keep important information above the fold. Above the fold is a term used in the newspaper industry describing how main stories were placed in the upper half of

the front page, exposing the reader to the most important information when the paper was folded. In the web industry, above the fold refers to information seen on the computer screen before you need to begin scrolling, usually being the top 600 pixels of the web page. Today's computer screen resolution averages 1024 x 768. However, with the increasing use of mobile devices and tablets, what is seen above the fold will vary greatly from device to device.

A new organizational map was created to show all the pages of the website and how they can be placed into sections that prioritize yet allow the viewer easy access to the information (see Figure 3). Services and all other areas of the health center, including new information, were appropriately categorized minimizing the options from the homepage. The new organizational map has only six options available that will appear in the website's main navigation. It was anticipated that the options on the new site would be equipped with dropdown navigation from the top of each page. From Figure 4, one can see the dropdowns easily show the pages and sub-pages above the fold, without leaving the homepage.

The navigation bar also resolves the issue within the health center of what department should rate a button. Naturally, every service in the health center feels it is worthy of a link from the homepage. Consolidating the main services within the health center under one umbrella not only resolves issues of importance, but gives the students a better idea of what is available to them by being able to look in one location. For instance, the Services dropdown shows all eleven services offered at the health center instead of only showing six found on

the old websites homepage. Similarly, students can see what is available in the wellness and counseling center at a glance through the dropdown menus. Ease of use for the site was greatly increased by reorganization of the site and minimizing options to the viewer from the homepage.

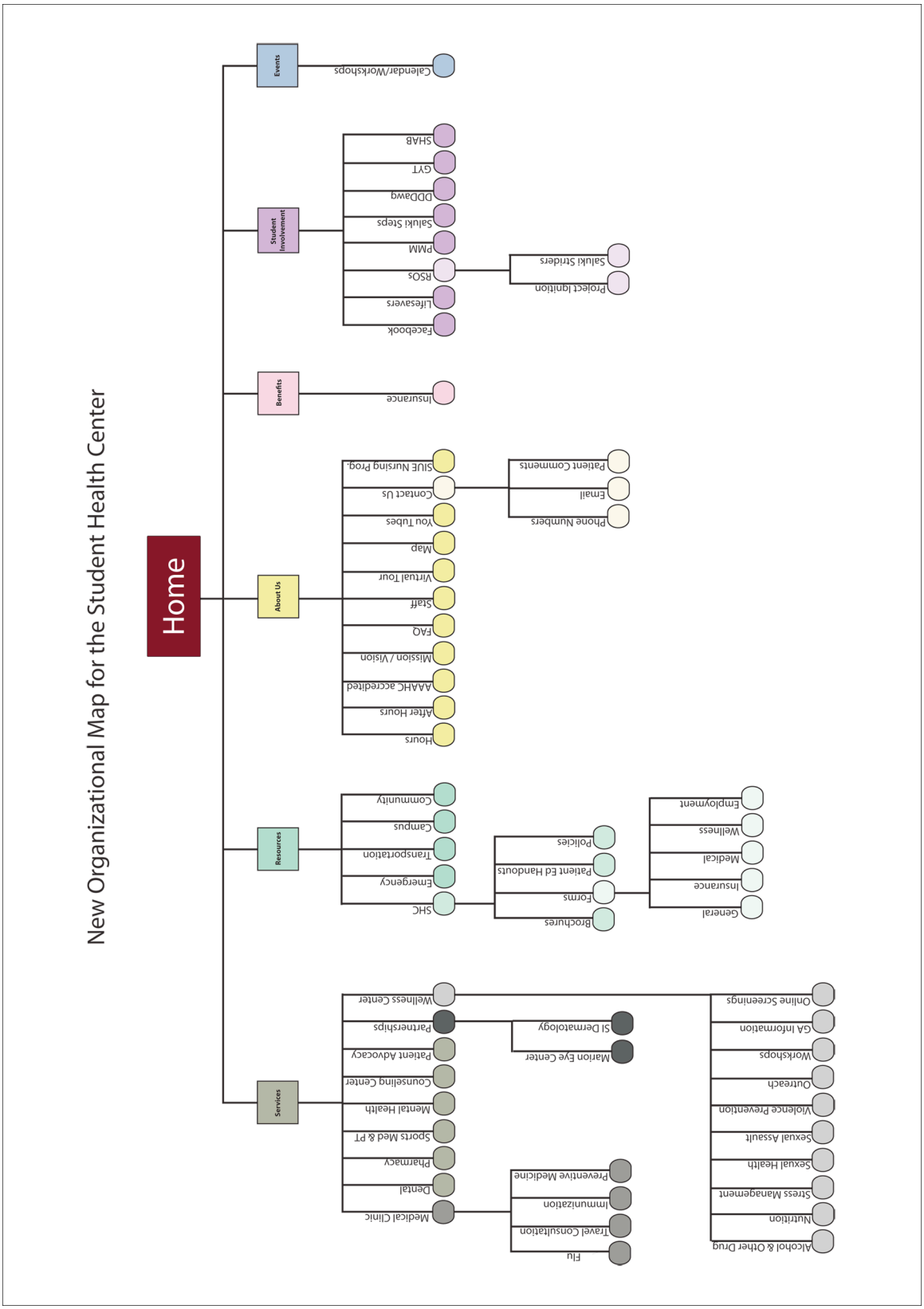
New Organizational Map for the Student Health Center
Home
Events
Calendar/Workshops
Student Involvement
SHAB
GYT
DDDawg
Salukí Steps
PMM
RSOs
Lifesavers
Facebook
Project Ianition
Salukí Striders
Benefits
Insurance
About Us
SIUE Nursing Prog.
Contact Us
You Tubes
Map
Virtual Tour
Staff
FAQ
Mission / Vision
AAAHC accredited
After Hours
Hours
Phone Numbers
Email
Patient Comments
Resources
SHC
Emergency
Transportation
Campus
Community
Brochures
Forms
Patient Ed Handouts
Policies
General
Insurance
Medical
Wellness
Employment
Services
Medical Clinic
Dental
Pharmacy
Sports Med & PT
Mental Health
Counseling Center
Patient Advocacy
Partnerships
Wellness Center
Flu
Travel Consultation
Immunization
Preventive Medicine
Marion Eye Center
SI Dermatology
Alcohol & Other Drug
Nutrition
Stress Management
Sexual Health
Sexual Assault
Violence Prevention
Outreach
Workshops
GA Information
Online Screenings

Figure 3.

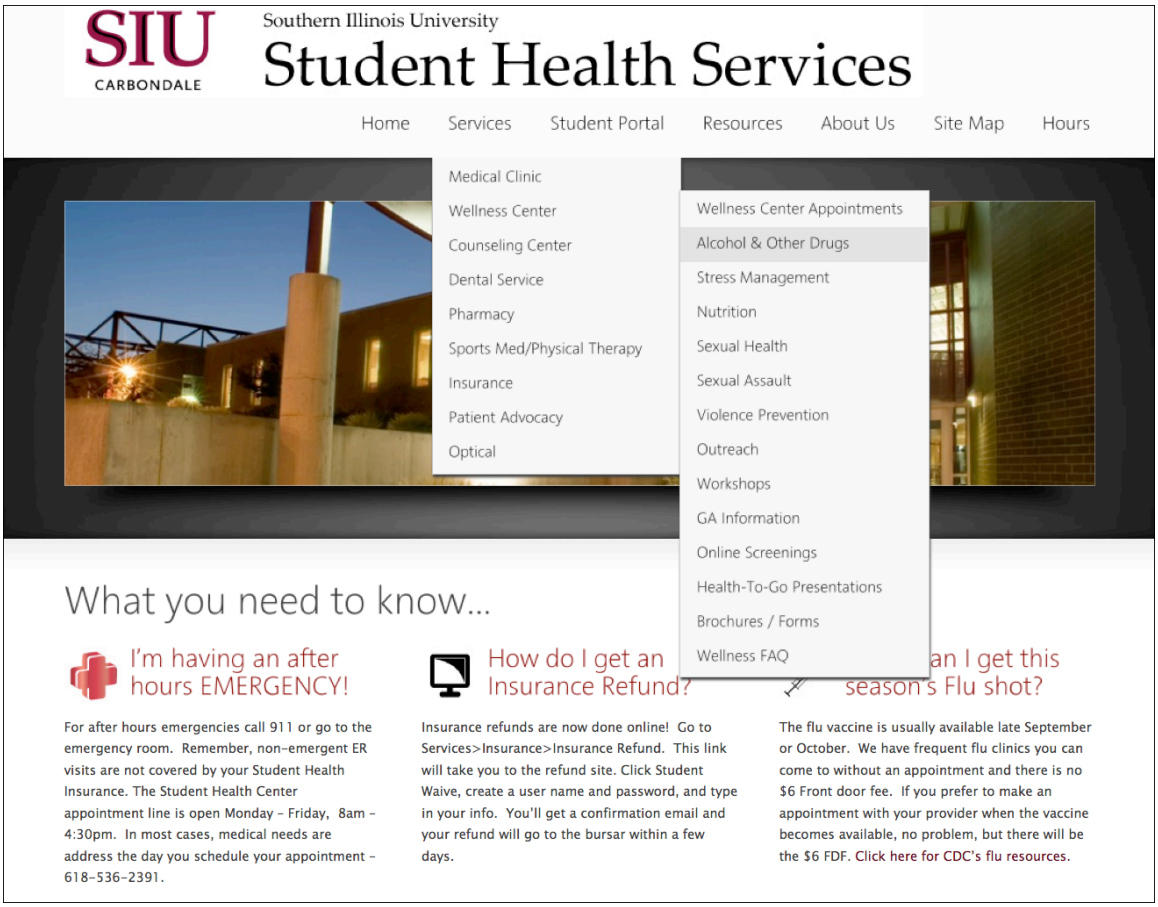

Figure 4. Dropdown Menus

Aesthetics and Graphic Design

Aesthetics play a significant role in the creation of a website. It is necessary for a website to be visually effective, as design not only helps convey a message, but is the first impression viewers have of the site. Lack of visual aesthetics may cause the site to be interpreted as unprofessional, causing users to question the reliability of the information or services. When surveying current students at the university, several aesthetic issues were mentioned that could easily be resolved in a re-design. Students noted they would like to see more photographs, make the site's pixel dimension wider to fit in today's larger screen

resolutions, keep important links above the fold, and update the site's appearance.

In the new design (see Figure 4), photographs were added throughout the site as either slideshows on the homepage or landing pages of major sections, individual shots located on pages within the site, or by the Picasa link at the bottom of the footer on every page. Here students can see photographs of student involvement as well as the health center departments. The new site also offers a wider pixel width to accommodate today's larger screen resolutions of the target audience. As attention was put into keeping important links above the fold, the use of a navigation bar at the top of each page resolved the issue of keeping major information above the fold. The navigation bar consists of dropdown menus of all sections and pages within those sections, which could be seen without having to scroll below the fold. The new site also implemented tasteful headers using colors mandated by the university. The pages have ample white space which gives a clean and open appearance. Easy to read sans-serif fonts were chosen to allow effortless viewing of the text, as the health center's website is often text heavy. The blog style layout chosen for the new site not only lends itself to a professional appearance, but allows a blog to be started on any page within the site if deemed necessary.

Navigation

Easy to follow navigation was a priority for the new site. Good navigation assures consistency and accessibility within the site. In the original design, many

web pages gave no indication as to what section a user was within the site. In the new design all pages of the health center's website have the same top navigation and same footer that never changes. To make navigating individual sections easier and to avoid continually searching the dropdown lists, each major section has its own left navigation. For instance, the wellness center area of the website has fourteen pages within it. These fourteen options are always found in the left navigation, no matter what page the viewer is on within the wellness section (see Figure 5).

Other features were applied to the design to assist the viewer with navigation. As seen in Figure 6, a bread trail appears on every page under the main sub-header. This corrects issues in the original site where it was often difficult to know where the user was within the site. The addition of a self-updating site map was added to the site for quick page reference. The site map is located in the main navigation bar. When choosing the sitemap option, a listing of all services and subsequent pages appear, so users can scroll through the same information as the dropdown menus, but in one central location (see Figure 7). As information is added to or deleted from the site, this site map corrects itself, saving the Webmaster time and assuring that it will always be accurate. The website also has a search tool in the footer which makes the search option available on every page of the website. This search tool searches only the information within the health center's site, making the search process more simplified (see figure 8). Also found in the footer, which is at the bottom of every page, is a Contact Us area, Facebook and Twitter links, an area to email the

health center with questions, a quick reference for important links, and a link to the health center's Picasa page, which shows photos of student involvement, as well as photos of the health center.

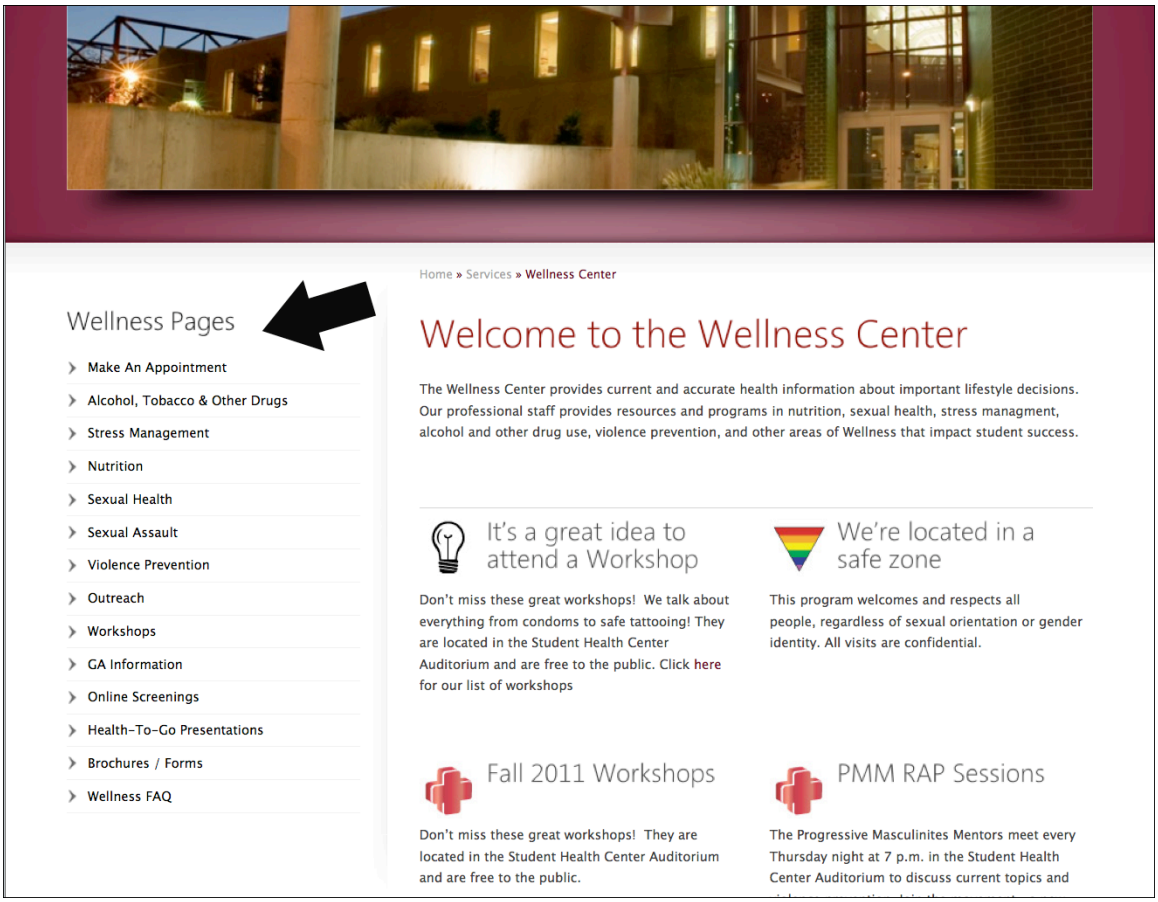

Figure 5. Left Navigation

Figure 6. Bread Trail

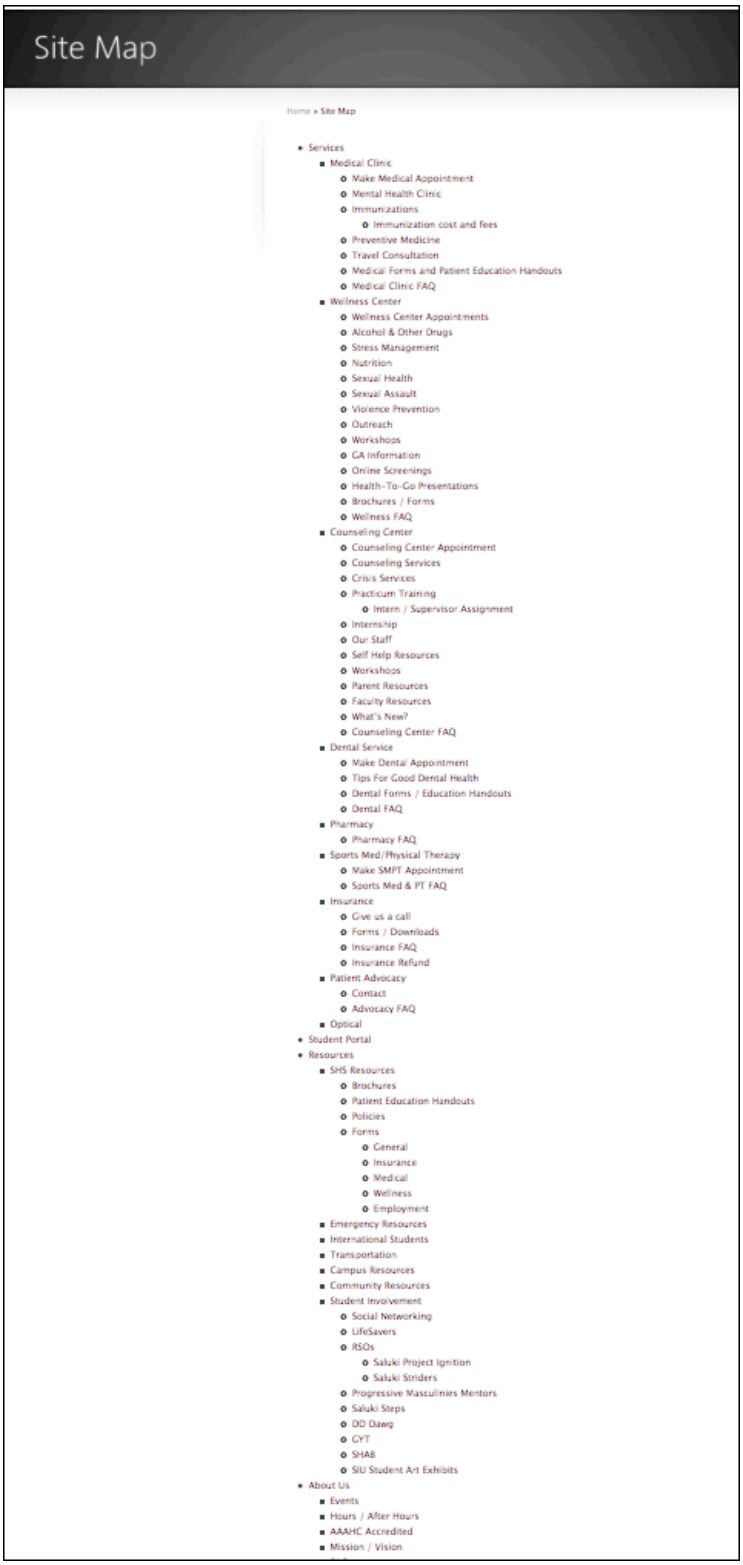

Figure 7. Site Map

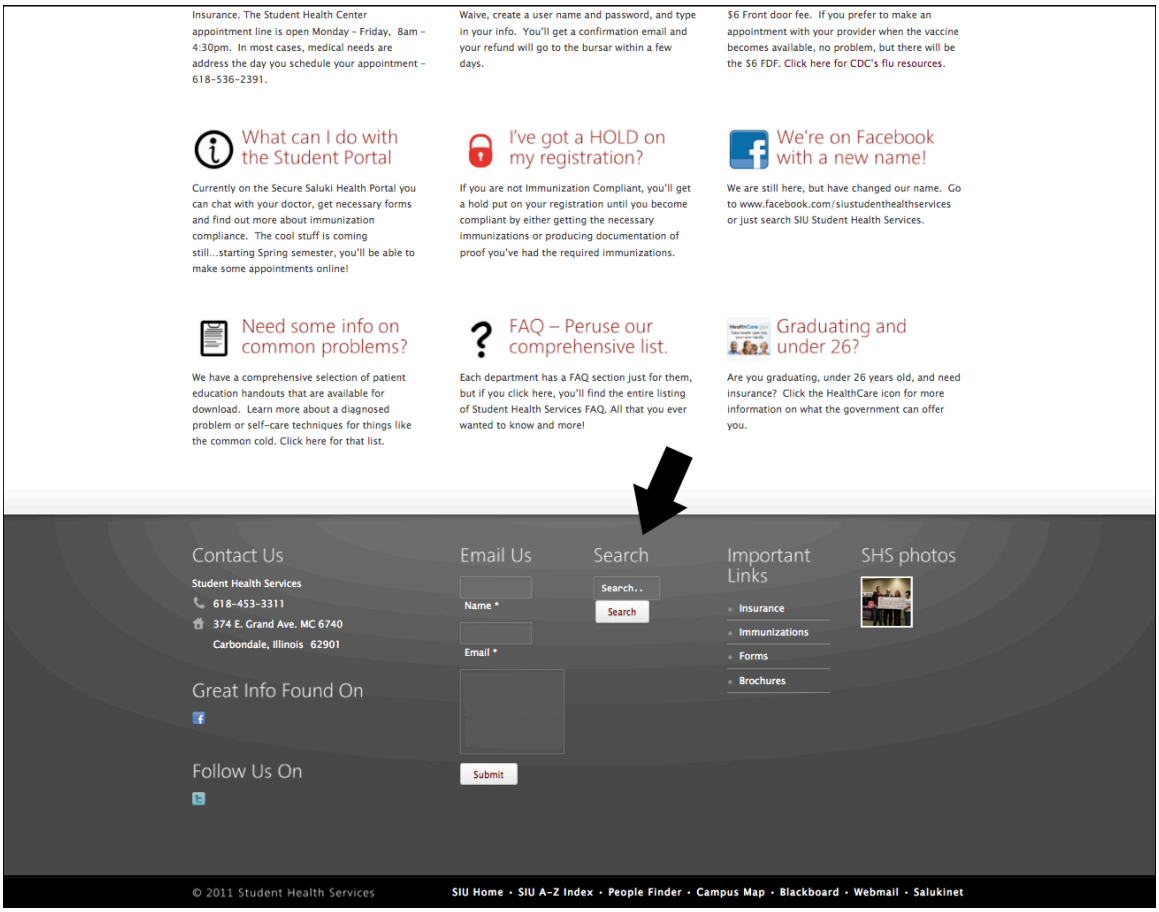

Figure 8. Search Tool

Consolidating Information

The current site is cluttered with unnecessary pages stemming from each section. In some instances, a page was created just to list a phone number. These areas were reviewed to see how information could be made more succinct. As an example, the Alcohol and Other Drugs section on the original site had eight pages coming off of its original landing page (see Figure 9). In the new site, there is only one Alcohol and Other Drugs page, with the major topics at the top where the viewer can either scroll down and read all the information or click on one of the major topics, which would bring that information to the top of the

page (see Figure 10). Similar consolidation was done throughout the site, to take unnecessary pages and create a new way to present the material, making it more accessible and easy to read.

Figure 9. Demonstrates All Links in the Alcohol and Other Drug Section

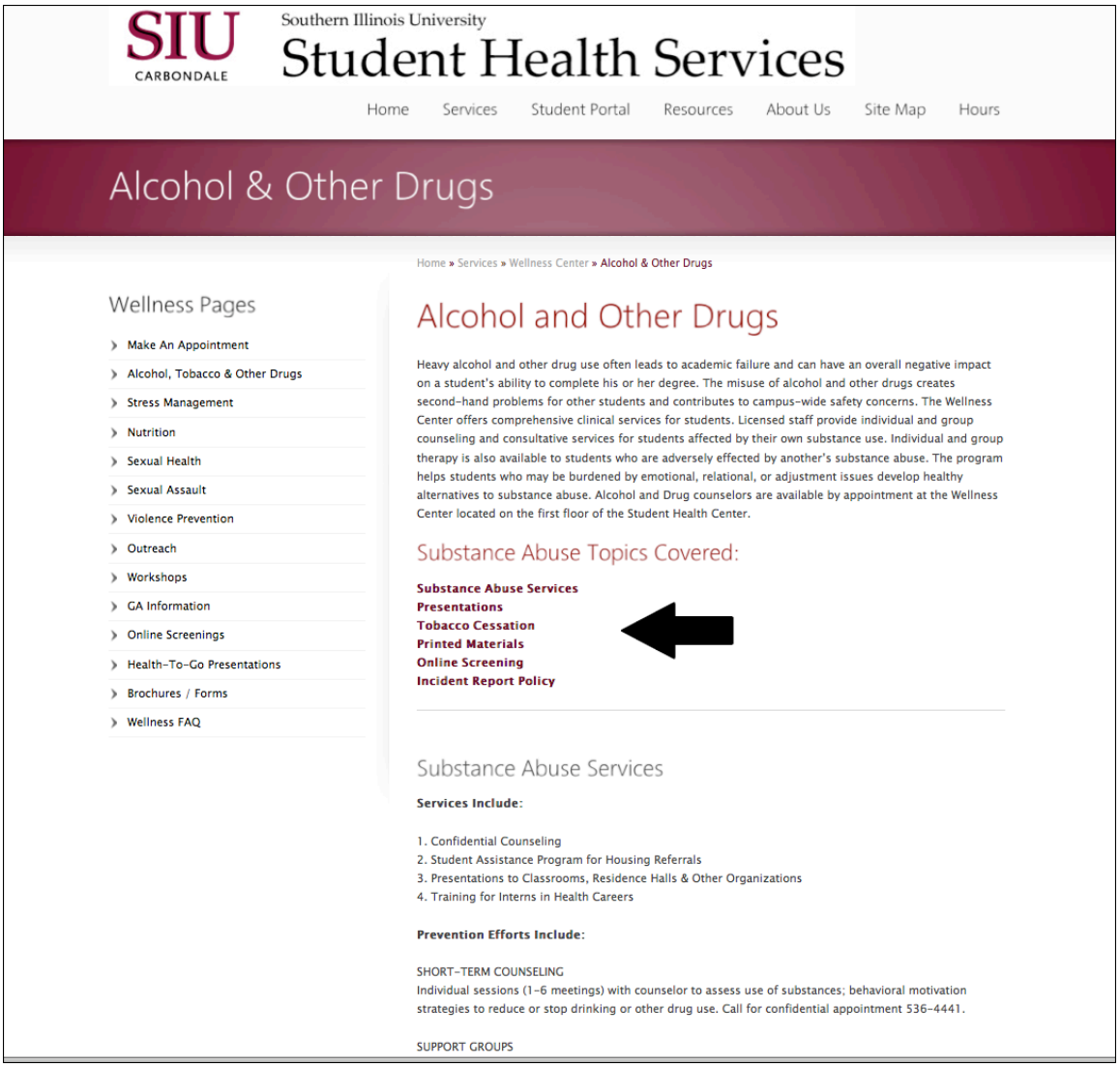

Figure 10. Topics Within Page

Traditionally, health information websites are overloaded with necessary information, which poses the challenge to represent the information in a way that is pleasing to the viewer. Jakob Nielsen explains website viewers skim web pages and do not read lengthy passages. He says to employ “highlighted keywords, meaningful sub-headers, bulleted lists, one idea per paragraph, start with the conclusion first, and use half the word count of conventional writing”

(Nielsen, n.d.). As seen in Figure 10, the pages are clean and spacious with large, easy-to-read headers, straight forward sub-headers, left navigation for section directions, numbered lists, and as minimal text as possible.

Choosing a Platform to Meet Requirements

Choosing the right platform to create the new website required careful consideration of all the options, limitations, needs of the target audience, as well as health center and university requirements. A Content Management System (CMS), which is a software program where websites can be built and managed, was chosen to be the platform for the new website. Several Content Management Systems are available today such as Joomla, Drupal and Wordpress, which are open-source software and have large communities of users and template creators. Webmasters have the ability to create their own template or use one of thousands that are readily available.

Wordpress was chosen to be the CMS for the new health center website as it is a stable software that has many built-in capabilities this site required, such as auto-generated bread trails, a self-updating sitemap, as well as in-site search tool. Wordpress has many advantages such as a user-friendly administrator panel (see figure 11), which is the area on the web where you access the tools to create your site or make changes to existing pages. The website can be changed from any computer that has Internet access and anyone, who has been designated as an administrator, can log into the Wordpress page and make the

changes. This is practical for the health center website, as it requires multiple administrators.

The Wordpress template chosen was called Striking, because this theme gave multiple options to those who wanted a site that is more page-based, like a regular website, and not blog-based, like many CMS sites are designed to be. Customization of the site is enhanced by the opportunity to use pre-determined options the theme offers, or by the ability to add a developer's own html code. This theme allows for a personalized header and an unlimited color palate, which will be conducive to complying with university standards. This template satisfied the requirements of basic website layout where an original design could replace the current theme's header, keeping the user-friendly dropdown intact. Sidebars and slideshows are optional, but were used to enhance aesthetics and usability of the site.

This theme is used by thousands of webmasters and has good technical support from the creator, as well as a large forum of users. Striking is updated regularly and uses HTML 5, which is the current web standard today. The down side to using a CMS theme is that if the theme is not maintained by the creator to the standards of the CMS developers are using, the site could stop functioning as it should. However, in theory, another template can be added to the site, which takes your information and reformats it to that particular theme's design. This works only if both themes have the same functionalities, but it is a possibility to change themes.

Catering to the Target Audience – A Digital Native

With our primary persona, Natasha, at twenty-one years old and having been born in 1990, she has never known a world without the Internet. Like most digital natives, the health center's target audience has fewer reservations when it comes to privacy and trust online. This would indicate that Natasha would not hesitate to use the secure student portal, to log into her personal account, to send and receive messages from her provider, check test results, or to schedule appointments online. She would also be likely to ask questions in an "Email Us" section. This opens up the idea of a blog or forum for patients to either talk to each other about health issues or potentially talk with health center staff. In view of the fact that healthcare involves sensitive and often private issues, blogs or forums may not be feasible at this time without considering all possible implications, such as sexual topics or rough language that are likely to appear in such discussions. However, keeping the possibility open is still important as the web habits of our target audience are more open and less reserved than older web users, making them more likely to participate in health discussions.

The "What you need to know" section, found on the homepage just below the photo slideshow, is a section of micro-articles discussing important topics and current issues. The top portion of this section is seen on the homepage above the fold, yet leads the user to more information below the fold (see Figure 11). Also seen in Figure 11 is the homepage slideshow that showcases photographs taken of the health center, which gives those who have never been inside the

facility, a view of the building and services without physically being in the building, fulfilling the request of students who were surveyed.

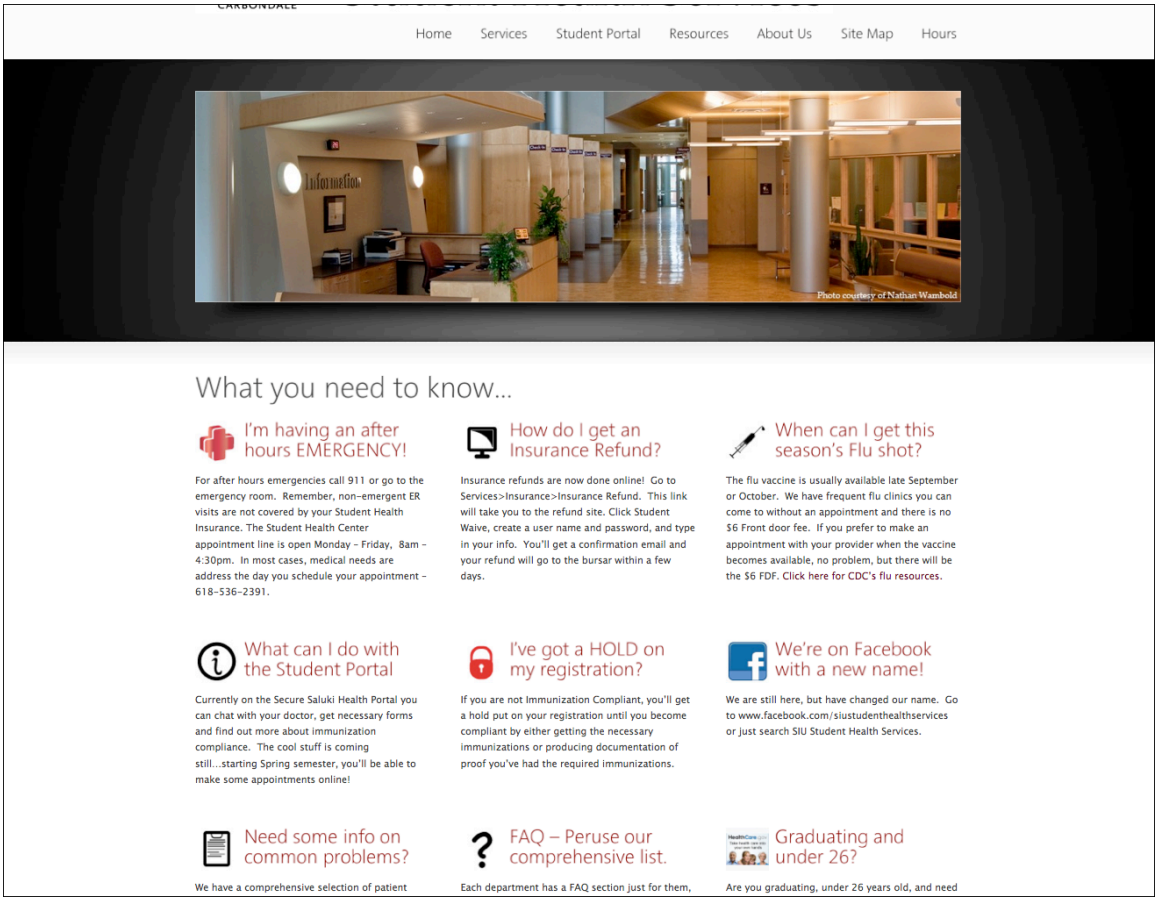

Figure 11. “What you need to know” Section

Preparing for the Future

In all, the new website has corrected the problems of the original site, as well as updated older information and added new sections. University and health service requirements were met with the re-design. The health center’s appearance is clean and modern, which helps to convey a regularly-maintained website, and is not cluttered with inappropriate effects that may take away from

the integrity of the site, while still meeting the layout and color standards of the university. All information on the original site was updated or removed if it was no longer in use. Photos were added to give the user a look into the health center without physically being in the building. An inclusive dropdown menu in the main navigation allows the viewer to search for information by mousing over topics without leaving the current page. Vital information is kept above the fold and all sections in the website navigation bar carry the same weight of importance, while important notifications or health alerts are visible from the homepage just below the slideshow. The search tool and site map help students find information, and the bread trail helps to keep the viewer oriented within the site. Left sidebar navigation within major sections keeps the viewer from having to go back to the main navigation and the header and footer achieve consistency throughout the site. The site is easily accessible for its administrators and updating, changing, or moving pages within the website are simplified by the user-friendly admin panel in Wordpress.

This website is now, and will continue to be, a work in progress. When the re-designed site is completed, user testing with students will be performed again to confirm problems have been resolved, as they are expected to be. Also, health center staff will be surveyed to assure the needs of each department, as well as the administrators, have been met. As times change, so do requirements, parameters, needs of patients and staff, as well the website platforms themselves. This website is one that is equipped for the future. As times change and the requirement for additional sections such as a blog or forum arises, this

website can easily be updated to fulfill those needs. Wordpress themes will continue to update, due to its thriving community, and will frequently give the website administrators new and current options. In understanding the history of technologies we recognize that change is inevitable. Therefore, we must not become too comfortable in how we create, manage and maintain websites, as good webmasters are always prepared for the next web revolution.

CONCLUSION

Technology is influential and can range from entertaining to devastating. It is powerful enough to change the way we live our lives and shape our culture. Frequently, effects from technologies are not seen until years, even centuries later. Some people may see societal changes from technology as dire and assimilating to new paradigms difficult. However, stopping a chain of effects from a technology is complicated if not impossible. Comparing effects of the Internet on society to technologies of the past such as the printing press and even the air conditioner in the South shows remarkable similarities.

Currently, the Internet is the method of choice for people to search for information, especially college students who normally have twenty-four-hour access either by computer lab or mobile device. So for the health center, it is vital to have a website that is current, trustworthy and comprehensive to serve the needs of the students. But like any technology, it is very likely to change or evolve. A transition from retrieving health information from websites to some other medium is indeed a reality. The explosion of social networking sites, especially among college students, could possibly be the new paradigm in retrieving information, but this potential is yet to be fully observed. Until then, awareness is imperative in keeping up with current technological trends.

The goal of the health center's website is not that of a vital marketing tool, but as an instrument for outreach and delivery of health messages so students remain healthy and achieve their goals as college students. Today, students use

the Internet as their resource for health information. The health center has the responsibility of not only meeting the needs and expectations of the students, parents, and university community with their website, but in keeping an ever watchful eye on future technologies that may create a completely new avenue for health promotion.

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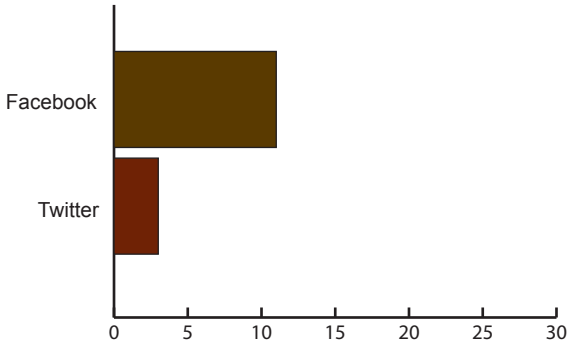
APPENDICES

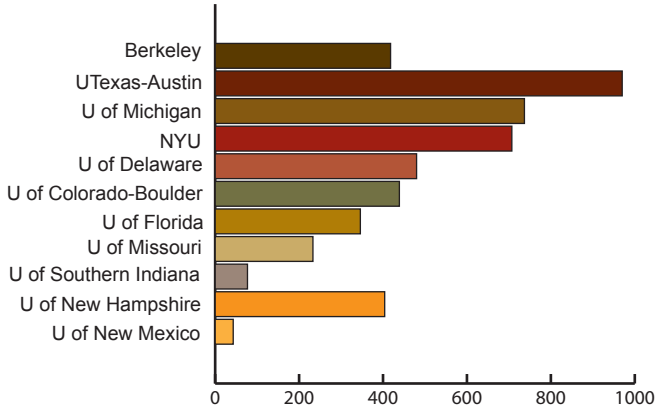
APPENDIX A

Social Media Survey

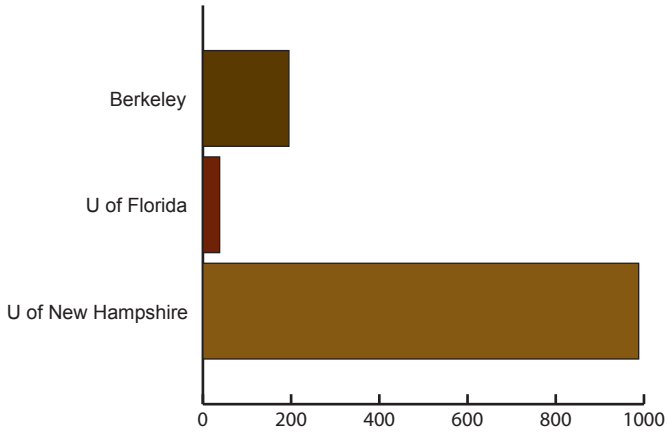
Out of thirty universities with student health services researched, eleven had Facebook pages and only three utilized Twitter.



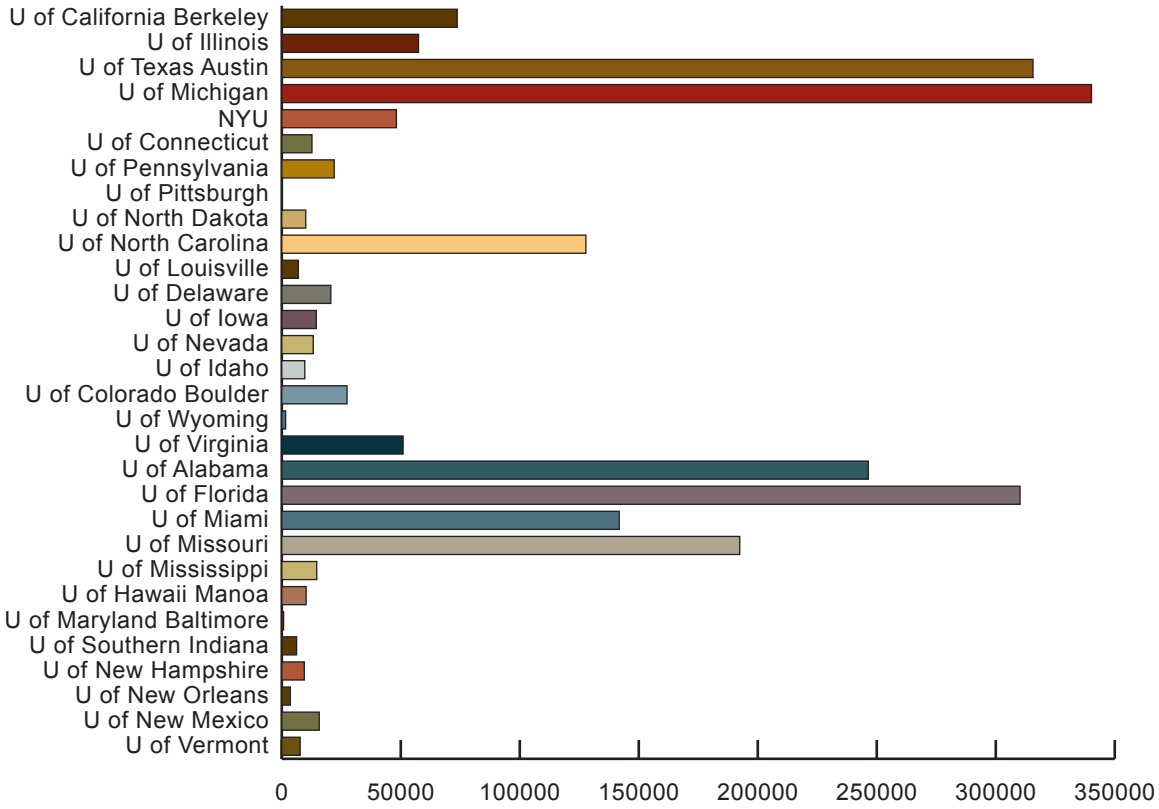
Total Facebook “Likes” per university’s health service.



Total Twitter followers per university’s health service.



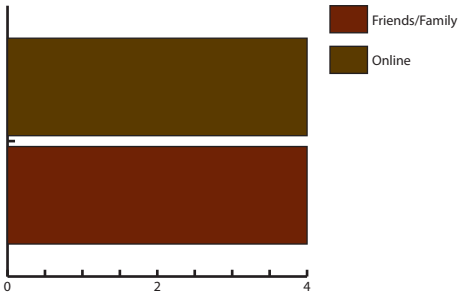
Number of "Likes" for each university's main Facebook page.



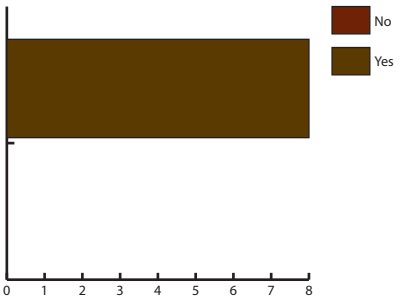
APPENDIX B

Student Survey

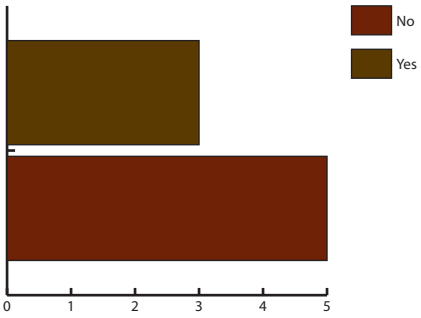
Question 1. If you have a health concern or health related question, where is the first place you would go to find the answer to your questions?



Question 2. Have you ever one online to find health information?



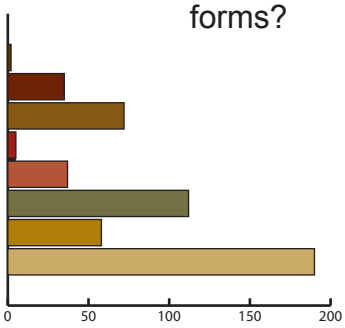
Question 3. Have you ever visited the Student Health Center's (SHC) website?



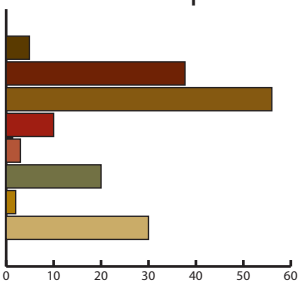
Question 4. If so to question 3, what was the reason for visiting the SHC site?

Answers:
Hours of operation
To get phone number
Curious about services available to students

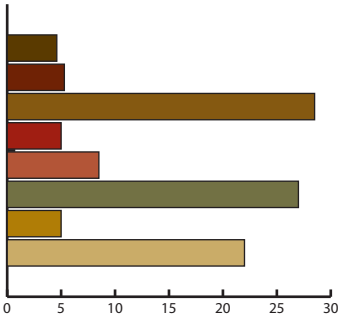
Question 5. Where would you go to find a general listing of Student Health Center forms?



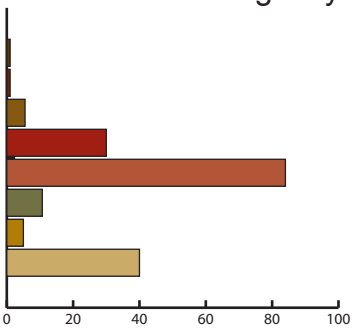
Question 6. Where would you go to get the Student Health Center's information phone number?



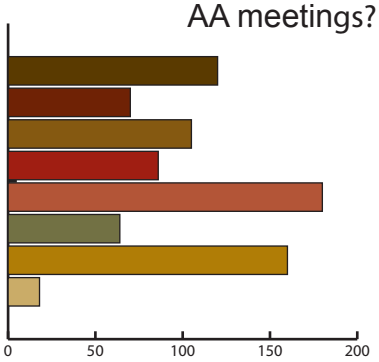
Question 7. Where would you go to get information on how to quit smoking?



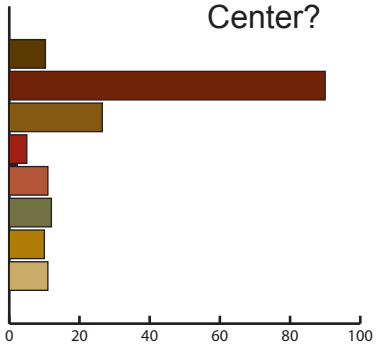
Question 8. Where would you look to see what to do if you are having an emergency after hours?



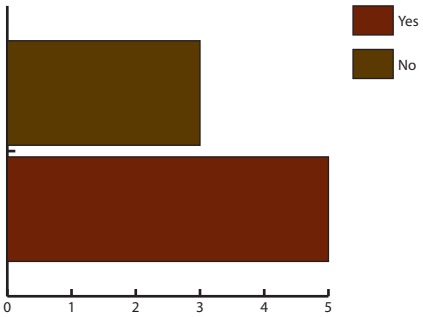
Question 9. Where would you look for a list of community health organizations such as the Women's Center, Carbondale Memorial hospital or local AA meetings?



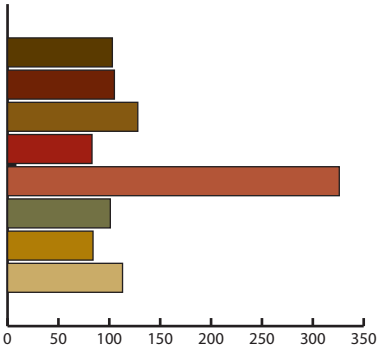
Question 10. Where would you go if you wanted to email the Student Health Center?



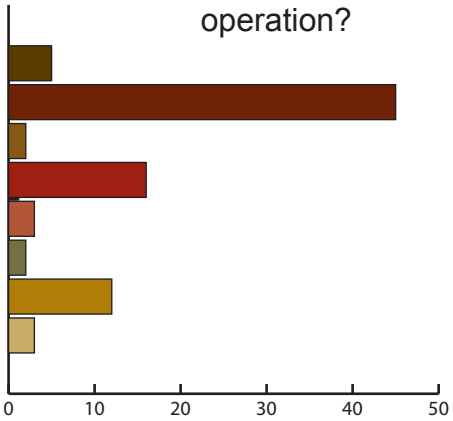
Question 11. If you were on the Student Health Center's website, would you take an online quiz for fun?



Question 12. If you saw a flier on campus promoting a workshop on safe tattooing, where would you look to find the flyer?



Question 13. Where would you go to find the Student Health Center's hours of operation?



Question 14. Do you feel information is easy to find on the Student Health Center's website?

1. Yes but expand the resource section
2. Good but not perfect, need a search section
3. Easy, but often too many clicks needed
4. Yes
5. Yes, lots of information, just finding it is sometimes hard
6. Pretty easy, some obscure stuff
7. Self explanatory, but better wording necessary
8. Easy

Question 15. Is there something you dislike about the current SHC website?

1. If not a button, doesn't seem as important
2. No
3. No
4. Buttons are distracting, maybe look untrustworthy
5. Hours button is a different color than other buttons
6. No search tool
7. Not full screen
8. Not full screen, looks like an older style website

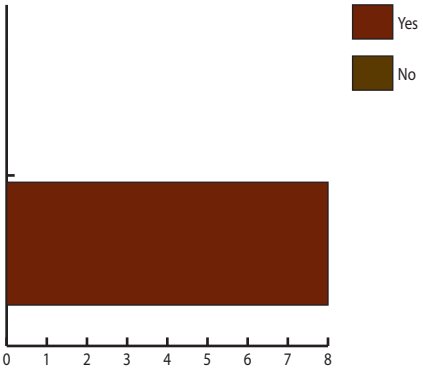
Question 16. What kind of information would you like to find on the SHC website?

1. Nothing
2. Nothing
3. Nothing
4. Nothing
5. Nothing
6. Workshops easier to find
7. Workshops easier to find
8. Workshops easier to find

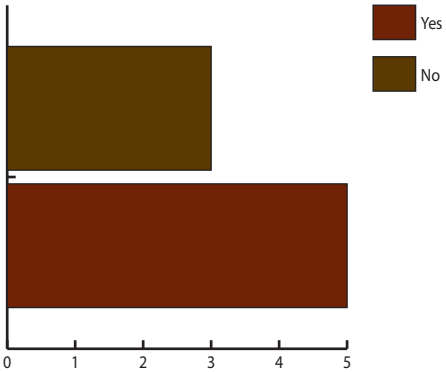
Question 17. What perception do you get about the Student Health Center from the website?

1. Friendly
2. Effort was put into site
3. Buttons make things seem playful, not as serious
4. Lots of services to offer
5. Professional
6. Informative
7. Cool but older
8. Helpful

Question 18. Are you on Facebook?



Question 19. Would you ever “Like” the Student Health Center’s Facebook page?



Of the ones that answered no, they would still occasionally visit the SHC Facebook page to see what was going on, they just would not “Like” it.

Two of the five that said they would “Like” the page was because they support all SIU affiliated organizations on Facebook. One student said they would “Like” it because as a freshman they saw a Wellness Workshop that was an inspiration to them and they would want to be affiliated with us because of that.

None of the students would “Like” any other health organization, such as the CDC’s Facebook page, unless they were somehow affiliated with the organization.

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Major Professor: Robert Spahr