

# **UNDERGRADUATE RESEARCH IN WEB 2.0**

Arshia Khan, Ritika Jhangiani, Shinjini Kar, Michael Lewis and Joshua  
Schmitz  
School of Business and Technology  
The College of St. Scholastica  
Duluth, MN 55811  
akhan@css.edu

## **Abstract**

This paper is a culmination of 3 research projects done by 4 undergraduate students in the area of Web 2.0 technology and its application in academia. The motivation behind these projects is the passion of these students to pursue graduate studies. These projects are an analysis of the use of social media in personal and academic life of undergraduate students, categorized by gender.

The plan for the studies was set as a three step process.

The first step was to understand the internet usage phenomenon by undergraduate students. This foundational study led to the second step of categorizing the web 2.0 awareness and usage by various academic majors grouped into three areas of study: science, technology and liberal arts. The third step involved the incorporation of social media in the curriculum to study the connotations of the usage of the social networking in classrooms under organized and supervised conditions.

## **1.Introduction:**

The Web 2.0 undergraduate research project evolved into a three phase endeavor as the literature review progressed. The first phase was the study of the Internet usage by the undergraduate students based on gender. The second phase was to identify and target the most used applications by the undergraduate students. The third and final phase was to implement these applications in the curriculum to benefit the students.

The study in the first phase brought an understanding of the social media usage by students and their awareness of the Web 2.0 terminology. This introductory study led into the second phase of categorizing the web 2.0 awareness and usage by various academic majors grouped into three areas of study: science, technology and liberal arts. The intermediate phase classified the Web 2.0 usage based on the technical background skills. The first and second phase formed a foundation for the development of the third phase. The third phase involved incorporating social media in the classrooms to study the implications of the usage of the social media in classrooms under controlled and monitored circumstances. The objective of the third study was to integrate two different forms of social media in the curriculum, and to encourage communication, collaboration, sharing and discussion in order to achieve higher standard of instruction.

## **2.Phase I: Gender Differences in Internet Usage**

It is widely believed that females are not as competent or comfortable with the use of the internet as compared to males. Earlier studies from 1990's show that males had more competency with all forms of technology including the use of internet, while studies from 1997 show the gender difference diminishing, but with males still being more comfortable with the internet (Morahan-Martin, Schumacher, 2001). A study conducted among pre-service teachers in 2008 found no significant gender difference in internet usage and attitude (Tim, 2008). The goal of this study is to identify if there exists a gender difference among college level students with respect to how they use the internet for academic, social and personal purposes and their attitude and comfort level towards using it. This information could provide valuable guidelines for teachers towards tailoring the use of the internet for academic purposes, in order to provide a more satisfying learning experience for male and female college students.

### **2.1 Method**

The sample consisted of 49 students with majors ranging from CIS, HIM, Mathematics, English, Education, Nursing, PT, Management, Biology, Pre-Med., and Journalism. Data collected was based on:

- Time spent on internet for various purposes was measured in 3 ways:
  - i) Time spent for academic, social, or personal purposes in terms of number of hours per day by each gender.

- ii) Time spent on (measured in number of hours): Email to friends, Email to family, Email for studies, Getting information in general, Getting information for studies, Online banking, Online shopping, Downloading free software, Accessing online newspapers/articles/magazines, Online discussions, Online games, and Social networking
- iii) The participants were given half an hour to browse any websites of their choice. Data measured included the time spent on each website, and the category each website fell under. 10 categories were provided to students: Social networking, Online shopping, Online banking, Academic, Leisure (gaming), Entertainment (videos, music), Email, Information (articles/newspapers/ blogs etc), Online discussion ( msn live messenger, g-talk, chatting etc), Other (specify).
- Attitude towards the internet: The Computer Attitude Scale used was the same as the one used by Teo to measure the attitudes of pre-service Australian teachers towards the internet (Teo, 2008). The participants were provided with a set of 6 statements and asked to rate them from 1-5 (1: complete agreement, 2: somewhat agree, 3: neutral, 4: somewhat disagree, 5: complete disagreement). The positive items (starred) were reverse coded in order to conduct meaningful analyses.
  - The affective attitude component had 2 questions:
    - If given the opportunity to use the Internet, I am afraid that I might damage it in some way.
    - I hesitate using the Internet in case I look stupid.
  - The Perceived Usefulness component had 1 question:
    - The Internet can allow me to do more imaginative way. \*
  - The Perceived Control component had 3 questions:
    - If I get problems using the Internet, I can usually solve them one way or the other. \*
    - I need an experienced person nearby when I use the Internet.
    - I do not need someone to tell me the best way to use the Internet. \*

## 2.2 Analysis

- I. Females spend more time on the internet for academic and work related purposes, while males spend more time on the internet for personal purposes per day: Refer to Fig2.1
- II. Females spend more time on the internet to get information in general and for studies, and online shopping. On the other hand, males spend more time on the internet downloading free software, accessing online newspapers/ articles/ magazines, and playing online games: Fig 2.2
- III. In the 30 minutes that the participants were given to browse any website of their choice online, 100% visited social networking sites. More females than males visited online shopping, academic, email, and online discussion sites. More males than females visited gaming, and entertainment sites: Refer to Fig 2.3

IV. Overall scores show that males have a higher level of affective attitude, and perception of perceived usefulness and perceived control than females: Refer to Fig 2.4, Table 1, Table 2

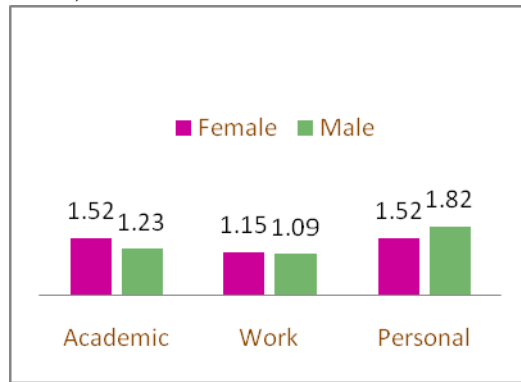


Fig 2.1

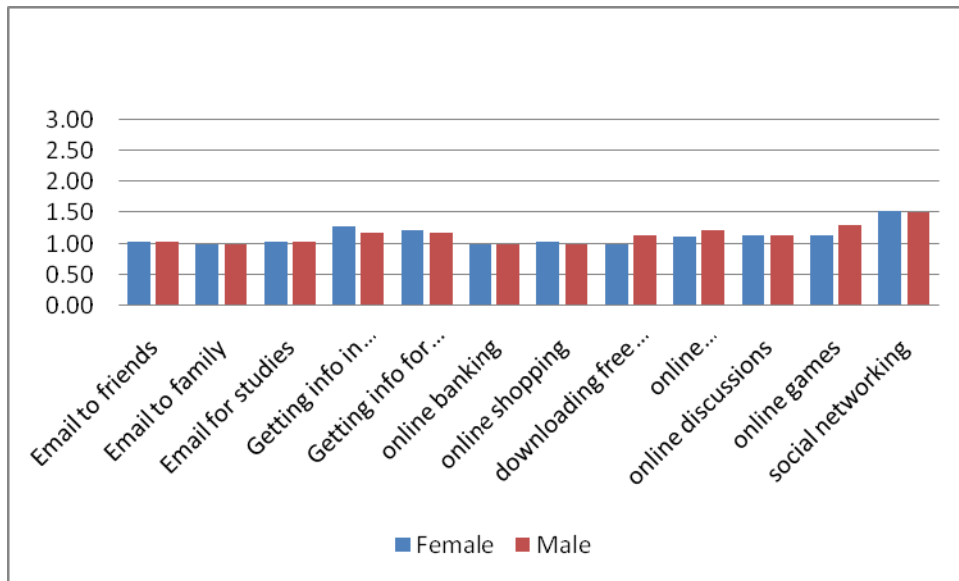


Fig 2.2

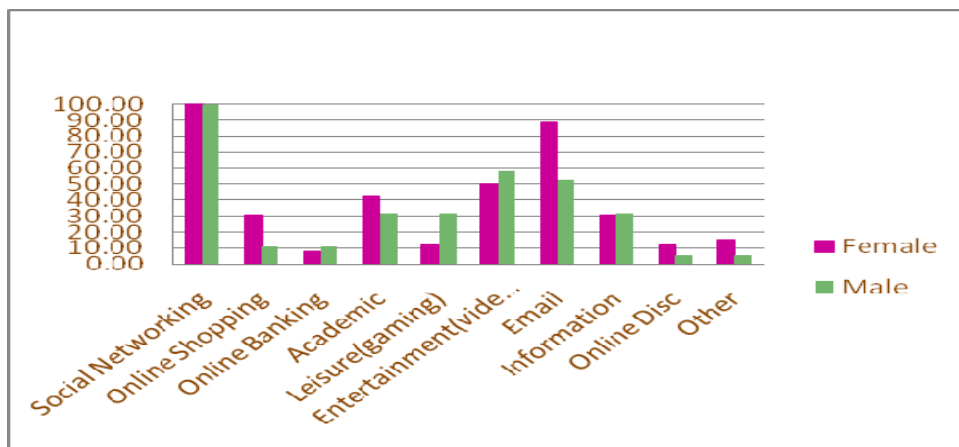


Fig 2.4

### 2.3 Discussion

The results obtained point to the idea that female students use the internet more for communication, shopping, and informational purposes while male students use it more for entertainment, gaming, and getting information from magazines and articles. An interesting thing to observe is that both genders spend comparable amounts of time online, but for different purposes.

Male students seem to have a higher level of affective attitude towards the internet as compared to females. They also seem to feel they have more control over it, and consider it more useful than female students do. This could possibly be because males know how to make better use of the internet (as seen by perceived control rating) thereby leading to their getting greater benefits from it (as seen by perceived usefulness ranking).

These results could be used by teachers to tailor their approach of using the internet for class related purposes in order to ensure that each gender gets maximum benefit. For example, since females are more communication oriented, class activities could include online discussions with peers and other sources. On the other hand, as seen by the results, male students may have a more satisfactory experience if their class activity included finding articles online, or learning through educational videos.

Internet Attitude		Female	Male
Affective	If given the opportunity to use the Internet, I am afraid that I might damage it in some way.	4.37	4.68
	I hesitate using the Internet in case I look stupid.	4.30	4.73
Perceived Usefulness	The Internet can allow me to do more imaginative work. *	3.63	4.19
Perceived control	If I get problems using the Internet, I can usually solve them one way or the other. *	3.93	4.32
	I need an experienced person nearby when I use the Internet.	4.33	4.63
	I do not need someone to tell me the best way to use the Internet.*	3.81	4.36
* Reverse coded to obtain a meaningful analysis.			

### 3. Phase II: Web 2.0 Applications

While understanding how the genders used the internet differently helped us lay some groundwork for our application of Twitter and Facebook in class, we still needed to narrow down our research. Not only did we need to know how gender influenced internet use in college, but we needed to understand the influence gender coupled with the

differing areas of study had on the use of social networking Web 2.0 tools as well. Several studies have been undertaken to analyze the connection between undergraduate students pursuing a particular academic major and their relation to time spent on social networking web 2.0 tools. My project was aimed at understanding the difference between the two genders and their use of web 2.0 tools based on their academic majors and to verify if the amount of time spent by students in different majors was different or same. The research was undertaken to better understand the psychology of students as related to the exposure to technological devices and advancement.

### 3.1 Method

The study analyzed the connection between undergraduate students pursuing a particular academic major and their relation to time spent on social networking web 2.0 tools. The first phase of the study aimed at understanding the difference between the two genders' use of web 2.0 tools based on their academic majors, and second phase was to determine if the amount of time spent by students on social networking differed by majors. 95 undergraduates were surveyed in 10 majors at The College of Saint Scholastica. This research was a part of a larger survey about web 2.0 awareness.

The survey was conducted to study the use of social networking media by different genders in different academic fields. The web 2.0 tools under consideration were: Facebook, Twitter, LinkedIn, MySpace, Meebo, Digg, Digsby

The participants were asked to rate the websites according to the highest amount of usage. Facebook surfaced as the most widely used social media, while the others had a comparably low rating.

### 3.2 Analysis

The surveys were aimed at measuring the number of male and female students in different academic majors and the use of social networking media by these students based on their majors. The Fig 3.1 represents the number of students (both males and females) to be the highest in 'business and technology' field. Males dominate the technical fields, whereas females dominate the arts and sciences.

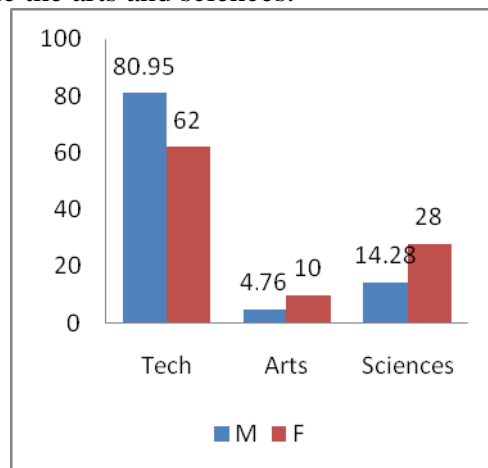
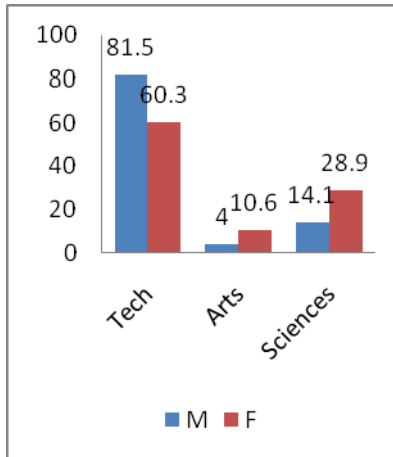


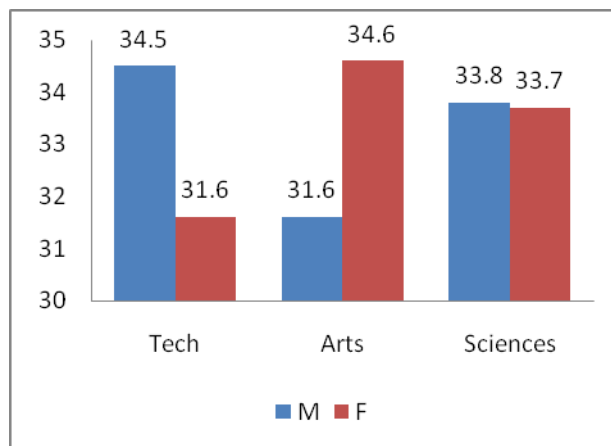
Fig 3. 1

The Fig 3.2 represents the percentage of frequency of time spent on Social Networking websites by students in different fields. That is the graph shows how much percent of time in hours is spent by all the males and females on social networking websites.



**Fig 3. 2**

And the Fig 3.3 shows the percentage of use (in time) of social networking media by one person in a specific academic field.



**Fig 3. 3**

### 3.3 Discussion

From this study it can be concluded that students in technology based majors are more exposed to technology and hence, more confident. They spend more time using social networking sites than males and females in any other academic field, namely the arts and the sciences.

Although students in technological fields spend more time on social media, on making a gender based comparison we find that males in the technical fields are more apt to using social networking sites more than males in any other fields or more than females altogether. And even though the percentage of females is higher in the technical fields, these are the females that spend the least amount of time on social networking media than females in any other academic field.

This research opened doors for the following project which helped determine the significance of use of social networking media like Facebook and Twitter in classroom teaching.

## **4. Phase III: Twitter and Facebook in Class**

The last 2 studies shed brought about an understanding of the use of the internet and social networking tools by men and women in different areas of study. This lead to the application this knowledge to a classroom setting. The third study integrated social media like Facebook and Twitter in a classroom. The goal was to evaluate how popular these two social networking sites were when discussing academic related topics as opposed to personal matters, such as connecting with friends. This research was used not only to evaluate other student's opinions and behaviors, but also to give the research assistants the experience of conducting research in light of future graduate school plans.

### **4.1 Method**

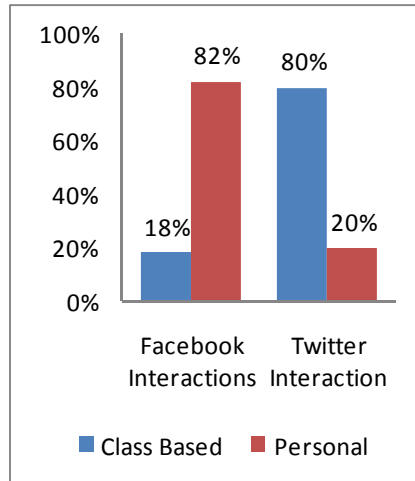
When evaluating the usage of both Facebook and Twitter in the academic setting, one of two classes was assigned to use Facebook as a Web 2.0 tool to communicate material currently being covered in their class. The other class on the other hand was using Twitter to post information about their class material. This study was conducted for six weeks, having the students post at a minimum of three times a week while allowing them to post as many times as they wanted. Throughout this term information on how the students were using each tool was stored in separate spreadsheets (one for Facebook and the other for Twitter) containing the number of times the student posted class related material, the number of personal posts, positive and negative comments about the tool, and the extent to which the student used the tool in general.

### **4.2 Analysis**

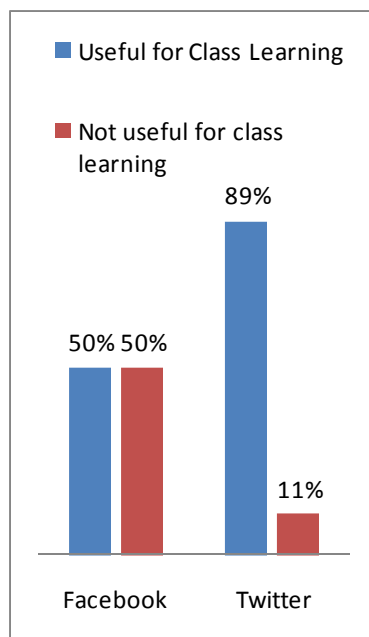
Upon completion of the term the information gathered was compiled and reviewed. The results showed that while the students tended to prefer Facebook over Twitter for their social networking purposes the interactions on twitter were more class material based. While 50 percent of students using Facebook felt the interactions were helpful for class learning, 89 percent of the students using Twitter felt the interactions were helpful for learning class material as seen in Fig 4.1. Among the posts made by Facebook users about 82 percent of the posts were oriented towards personal use and the other 18 percent contained class related material. The personal to class material post ratio on Twitter had just the opposite. About 80 percent of the posts mode on Twitter contained class related material and only around 20 percent were related to the student's personal life as seen in Fig 4.2. Our conclusion is that, while both Twitter and Facebook have great potential for information sharing as Web 2.0 tools, they each have a slightly different audience. Because of the interactions with other users and the entertainment aspect, it was concluded that Facebook is designed for relational and entertainment oriented audiences. With the calendar, picture, comment, and video features Facebook makes connecting with other users on a relational level easier and more convenient and makes having a conversation with someone easier than ever. Twitter, on the other hand, cuts out all of those relational features and focuses on news and update type of information. Twitter also has a limit on how much a person can post at one time forcing the user to be clear and concise while presenting information; posting a link to another web page and stating something that catches the reader's attention is how most of the posts on Twitter are constructed. Because of the brevity of the posts people find it hard to convey personal messages in such short verbiage narrowing down the content of what is posted to things



that can be linked to and read about in more detail from another source, and , in effect, professionalizing what is posted.



**Fig 4. 1**



**Fig 4. 2**

### **4.3 Discussion**

While Facebook and all of the features that go along with it are great for the personal aspect of social networking, it can be very distracting and overwhelmingly engaging . Twitter on the other hand can be more focused and concise, while sufficiently engaging.

## 5. Cumulative Conclusion

The first study shed light on the patterns of internet usage by undergraduate students. The female students were observed to be using the internet for informational and socializing while their male counterparts were observed to be using the internet mostly for entertainment. The results from this study triggered the curiosity among the students to study the web 2.0 usage based on their major.

The students with more technical majors seem to be using the internet more and feel more confident using it than the students with non technical majors. This led to the study of the benefits of the implementation of social media in a structure classroom setting. Social networking was used as a tool for collaborating, sharing and discussing topics that were being taught in the classroom.

The integration of Facebook and Twitter in classroom resulted in more interactions and sharing among students using Twitter when compared to students using Facebook. This study indicates that twitter can be more useful in classrooms than Facebook for class material based discussions.

The three studies conducted by the undergraduate students has lead to a better understanding of the internet usage , and recognition of the most used web 2.0 applications based on gender and their applications in a classroom. The use of social networking in a classroom under a structured program was found to be very beneficial. When a broader area of interest in research has been determined, it can be narrowed down by splitting the project into smaller phases that interest a set a group of students. A huge project can be split into smaller more manageable projects and handled by smaller groups of students.

These projects have provided the undergraduate research students with valuable learning experiences in terms of research and independent study, which will strengthen their candidacy for graduate school. This study helped the students become aware of the value of undergrad research when looking at applying to grad school and has given them the experience of conducting research as it is applied to their field of study.

This collaborative phase based research proved to be an excellent learning opportunity of the research techniques and methods for the research assistants conducting these studies in light of future graduate school plans.

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