

## Exploring the Potential Perceptions of Social Networking Systems in University Courses

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### Abstract

This project sought to determine the feasibility of using a social networking site, specifically Facebook<sup>®</sup>, as a study aide for a biology content course for elementary education majors at a comprehensive Midwestern university. One hundred and ten students were surveyed as to their current social network usage and their possible use of such sites in an educational setting. While initial survey results proved favorable, there were considerable comments regarding aspects of privacy, and possible distractions using such social networking sites for “school work”.

**Keywords:** Facebook<sup>®</sup>, Higher Education, Technology Integration

### Introduction

Educators have long searched for new technologies to aid their students in the process of learning. From the earliest uses with radio (the Federal Communications Commission granted over 200 educational radio broadcasting licenses between 1918 and 1946), to television (the University of Iowa offered the first application of educational television in 1934), technology has often proved expensive, cumbersome and unwieldy (Nasseh, 1997; Duffy & Kirkley, 2004; Jefferies, ND). It is commonplace, however, for technologies that are experiencing widespread adoption to become repurposed for education.

The first identifiable social networks website was launched in 1997, six to seven years before currently popular sites like Facebook<sup>®</sup>, MySpace<sup>®</sup>, and LinkedIn (Boyd & Ellison, 2007). Social networking has seen tremendous growth in recent years and was identified as an emerging technology for teaching and learning in the 2005 Horizon Report. Arguably the most popular social networking website site, Facebook is a social networking service which serves as “a social utility that helps people communicate more efficiently with their friends, family and coworkers” (Facebook<sup>®</sup>, 2008). A wide variety of utilities are available through Facebook, allowing users to communicate with others in chat rooms and by asynchronous messages, as well as share music, photos, Internet links, and other content. Facebook<sup>®</sup> also offers many collaborative features similar to those found in more mainstream educational tools such as the ability to create flashcards, form study groups, create online calendars, to-do lists, and even allow instructors to post videos for students to watch (Jacobs, 2008). Founded in 2004, Facebook<sup>®</sup> has over 80 million active users and an 85% market share in 4-year U.S. universities (Facebook<sup>®</sup>, 2008). Use of social networking sites such as Facebook among young people is staggering. “More than half (55%) of all of online American youths ages 12-17 use online social networking sites” (Pew Internet & American Life Project, 2007). A 2006 study indicated that 90% of undergraduates surveyed at the University of North Carolina, Chapel Hill reported using Facebook (Stutzman, 2006).

Though the popularity of social networking sites among college-age students is undeniable, the potential for this technology to positively impact student learning remains in question. As with any technology

system designed for social interaction and repurposed for teaching and learning, a careful and informed integration process is necessary to provide a foundation for developing new teaching and learning activities. Undoubtedly many of the teaching and learning activities that are currently being accomplished through learning management systems and other technologies can also be accomplished via some social networking systems. However, whether or not such an effort is likely to succeed is among the first questions that need to be addressed. If such an effort has a reasonable chance of success at improving teaching and learning, it is also vital to carefully consider the manner in which this new technology can be used to do so. It is the focus of this study to explore student perceptions and responses to these foundational questions in order to arrive at suggestions and practices that are most promising when integrating social networking into higher education courses.

### Review of Relevant Literature

The educational possibilities of social networking tools has been a recurring subject of The Horizon Project (<http://www.nmc.org/horizon>) which seeks to identify current and emerging trends in technologies to support teaching and learning. The Horizon Report first noted the emergence of social networking as a viable educational tool in 2005 (Johnson & Smith, 2005) and has continued to refine this discussion in each subsequent annual report (Johnson, Levine, & Smith, 2006, 2007, 2008, 2009). In the 2007 Horizon Report, the authors noted that, "the fact that so many students want these interactions and seek them out is a strong indication that we need to be very interested in them as well" (Johnson, Levine, & Smith, 2007, p. 18). In 2007, Johnson, Levine, and Smith again addressed social networking and emphasized "the gap between students' perceptions of technology and that of faculty continues to widen" (p. 7). Nevertheless, possible applications in supporting collaboration through the use of social networking technology were highlighted by the authors. In the 2009 report, Johnson, Levine, and Smith described the growth of mobile devices and the use of these devices with social networking systems as well as the emergence of a "personal web" through which students organize information and communication. The authors view social networking technologies as a mechanism to "continue a conversation outside of classroom walls or provide an easy way to update students on course logistics" (Johnson, Levine, & Smith, 2007, p. 20).

In a 2007 report exploring the uses of social networking systems among high school students, the National School Boards Association found that communications was the most prominent activity among users. In this study, 21% of respondents reported posting messages to a social networking site each day with an additional 41 percent posting at least weekly. Sharing of multimedia content such as videos or photos was also popular among the social networking users. The National School Boards Association report also identified a particular type of student as a leader in using social networking tools. Described as "nonconformists," these students "are on the cutting edge of social networking, with online behaviors and skills that indicate leadership among their peers" (p. 2). Though the report suggests that these students are more likely to have somewhat lower grades than other students, this group of students is described as having "an extraordinary set of traditional and 21<sup>st</sup> century skills, including communication, creativity, collaboration and leadership skills and technology proficiency" (p. 3). As this study investigated an age group that is now likely to be at or near college-age, it is logical to assume that social networking tools are already a part of the lives of many students as they leave high school. Clearly there is a need to consider if, and how, these tools can serve a purpose in higher education.

Though the popularity and extensive use of social networking systems is a relatively recent phenomenon, researchers have begun to investigate the educational applications of this technology. Huang, Yoo, and Choi (2008) investigated the relationship of student learning styles and preferences toward Web 2.0 tools. This study measured the learning styles of 84 students and designated a dominant learning style as Concrete-Sequential, Abstract-Sequential, Abstract-Random, or Concrete-Random. The study found that Concrete-Sequential learners, who prefer directed activities, real-world examples, and detailed instructions, were least intimidated by Web 2.0 tools including video-sharing applications and social networking tools such as Facebook<sup>®</sup>. Concrete-Random learners, who prefer more intuitive and instinctive approaches and are less likely to accept outside authority "perceived a high level of difficulty in using several Web 2.0 tools such as online community (Facebook<sup>®</sup>)" (p. 6). While Huang *et al.* urge caution when interpreting the results of this study due to the sample size, these results underscore an important point; the integration of technology such as social networking tools should not be expected to be perceived the same for all learners. While social networking tools will appeal to some learners, there

are other students for whom these tools may not be most suitable. An instructional approach that uses a variety of technology tools may be necessary.

In a recent study sought to connect Facebook® usage and academic achievement, Karpinski and Duberstein (2009) found a significant difference between users and non-users of Facebook® on both GPA and average hours spent studying. Facebook® users (n=148) had a GPA between 3.0 and 3.5 (out of 4.0) while non-users (n=71) typically had a GPA between 3.5 and 4.0. With regard to hours spent studying per week, Facebook® users averaged between 1 and 5 hours per week, while non-users averaged between 11 and 15 hours per week. Though Karpinski and Duberstein note that these differences do not imply causality, the relationship found is striking. It provides a compelling reason to consider whether efforts to integrate social networking into college courses would be influenced by such differences or whether such integration would serve to alleviate these issues by employing these systems for academic purposes.

Further study of the application of social networking tools in learning environments has focused on the development of “social presence.” DeSchryver, Mishra, Koehler, and Francis (2009) sought to compare the use of Facebook® discussion groups to the use of Moodle forums in terms of frequency of interactions among students, the length of discussion postings, and the perception of social presence among users. In their study, DeSchryver *et al.* randomly assigned students in sections of an online course to groups that would use either Moodle forums or Facebook discussion groups for all online discussion activity in the course. The study found no statistical difference between the Moodle and Facebook groups on measures of student-student interaction and length of each posting. In comparing measurements of social presences, the study found no significant differences between the Facebook and Moodle groups on the overall social presence survey. A closer examination of the survey data, however, revealed a significant difference on two of the survey items. As the analysis revealed, students in the Moodle group agreed more strongly to the statement that “Online or web-based education is an excellent environment for social interaction” and another item regarding the students sense of online community. In explaining the results of this study, DeSchryver *et al.* suggest that arrangement of the online environment may have contributed to the results. As explained, the Moodle learning management system was used for the overall online course structure and only the discussion tools differed. As such, the authors suggest that this “may have divided the students’ online attention too much” (p. 5) and also that “many of the Facebook® ‘cues’ that might have otherwise driven students back to the discussion, or made them feel more of a sense of social presences, were not available” (p. 6). It is further explained that the Facebook® discussions are presented in a chronological format rather than in conversation threads, thus further mitigating the interactivity that was possible in Moodle. Though this study found few notable differences in the measured areas, the comparison of Facebook to more commonly used online discussion tools highlights the possibility that social networking systems may provide an alternative communications platform that may simply be accessible to students in a different form. Thus the question remains of whether these tools offer notable advantages, or if these tools are simply a different way to accomplish the same learning objective.

Central to the debate concerning the use of social networking systems in education is the knowledge that students are already heavily engaged in using social networking websites. As such, the question of whether social networking tools should be used in learning environments is better characterized as a question of repurposing an existing technology for teaching and learning. While it would be possible to begin to use a social networking system in a variety of ways in a university-level course, it is important to first determine the feasibility of such an effort and also to explore how students may respond to such an effort. It is the purpose of this study to explore student usage patterns and perceptions of the value of social networking technology in an academic setting in order to provide a foundation for the development of meaningful social networking activities to be explored in future research. The overarching goal of this study was to elicit information and perceptions from students that would provide the foundation for developing teaching and learning activities that would integrate social networking tools in a manner consistent with student expectations and perceptions of value. Specifically, this study sought to address the following questions:

1. To what degree are students currently using social networking systems for personal communication and activities relating to academic course work?
2. What is the perceived value of integrating a social networking system with a university course?

3. What barriers or problems do students anticipate with regards to the integration of social networking technologies?

### Methods

One hundred and ten students were surveyed at a comprehensive Midwestern university during the Fall semester of 2008. At the time, all participants were enrolled in a survey of biology course geared towards elementary education majors. Of the 110 participants, 82 were in their first year of college, 23 were in their second year, and 7 students identified themselves as either, "juniors" or "seniors". A substantial majority of the students were female (107) and most (100) were between the ages of eighteen and nineteen.

The survey was administered in paper form to the participants. Participation in the study was voluntary and the Institutional Review Board approved all data collection procedures. The survey requested basic demographic data regarding the academic status and level of the participants and also contained items regarding the frequency of use of a social networking system and the frequency of use when communicating with four categories of social groups (e.g. friends, family, other students, instructors). Additionally, the survey asked about the likelihood of participating in nine types of activities that have been described by other research and popular media as possible academic uses of social networking systems. The survey also included eight Likert-scale items regarding the student perceptions and preferences concerning multiple aspects of social networking in an academic setting. Using open-ended items, participants were also asked to describe any anticipated benefits, problems or concerns with using social networking sites in courses.

Because the study sought information relevant to the future development of academic activities that integrate social networking technology, much of the data analysis was descriptive and conducted using SPSS statistical analysis software.

In addressing the degree to which students currently used social networking systems for personal communication and activities related to academic course work, the survey items regarding the frequency of use and communication with various social groups were most relevant. The perception of the value of social networking technology was assessed using three items; survey items regarding student perceptions and preferences; survey items in which student rated the likelihood of participation in various activities ; responses to open-ended items. The anticipated barriers, problems, and benefits of social networking in a course were primarily informed by the responses to the open-ended items.

### Results

With regard to use of the Facebook social networking site, a large majority (95.5%) of respondents indicated that they used Facebook either daily, or multiple times each day. Only one participant reported not using Facebook at all

Table 1. Frequency of Facebook<sup>®</sup> use (N=110)

	<i>F</i>	%
Never	1	0.9%
Monthly	2	1.8%
Weekly	2	1.8%
Daily	24	21.8%
Multiple times per day	81	73.6%

As shown in Table 2, communication with friends was the most common type of communication activity, followed by communication with family. Most of the respondents (85.5%) indicated that they had never used Facebook to communicate with an instructor, though most (77.3%) has used Facebook® to communicate with other students in their courses.

Table 2. Frequency of Types of Communication using Social Networking Technology

	N	Never	Very little	Sometimes	Frequently
Communicating with friends	110	.9%	0%	11.8%	87.3%
Communicating with family	110	5.5%	22.7%	52.7%	19.1%
Communicating with other students in your courses	110	5.5%	17.3%	53.6%	23.6%
Communicating with instructors	110	85.5%	11.8%	2.7%	0%

Data regarding the likelihood of participating in various academic uses of Facebook® indicate that participants were most likely to use a social networking system to communicate with other students in the class. In general, a majority of students were likely to participate in most of the activities suggested. However, ratings of the likelihood of participation were lowest for using Facebook® to “Communicate with Instructors” and “Using online discussions tools that included both instructor and students.” The highest ratings were in response to the “Access course notes and other materials,” “Viewing course schedule,” “Communicating with other students in my courses,” and “Joining a Facebook group for students in your courses.”

Table 3. Frequency of responses to likelihood of participation in course-related social networking activities

	N	I would not participate	I might participate	I would likely participate	I would definitely participate
Accessing course notes and other materials	110	3.6%	10%	41.8%	44.5%
Viewing course schedule	110	0.9%	16.4%	35.5%	47.3%
Communicating with instructors	110	6.4%	37.3%	38.2%	18.2%
Communicating with other students in my courses	110	0.9%	3.6%	40%	55.5%
Using online discussions tools that included both instructor and students	109	3.7%	32.1%	45%	19.3%
Using online discussion tools that included ONLY other students (without instructor)	110	2.7%	18.2%	54.5%	24.5%
Using Facebook quizzes relating to my courses	110	13.6%	20%	36.4%	30%
Using Facebook games that related to course material	110	10.9%	22.7%	33.6%	32.7%
Joining a Facebook group for students in your courses	110	1.8%	20%	32.7%	45.5%

Overall, participants responded favorably to the degree to which a social networking system could be used as an academic tool, with the greatest benefit coming in the form of increased communication among students.

*Table 4. Average ratings of student opinions of social networking as an academic tool (1= Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree)*

	N	Mean	S	Mode
I think Facebook can be useful in my courses	110	3.0	.55	3
I think Facebook can improve communication between students and instructors	110	3.0	.77	3
I think Facebook can improve communication among students in a course	110	3.4	.56	3
I think Facebook can be used to help students collaborate in higher education courses	110	3.0	.54	3
I would prefer to use Facebook in my courses rather than WebCT	109	2.7	.89	2
I do NOT want to use Facebook in any of my courses	110	2.0	.72	2
I think Facebook would be a distraction in higher education courses	110	2.6	.84	2
I would create a separate account in Facebook for use in my courses	110	2.7	.90	3

Questions regarding the uses of Facebook as an educational tool for higher education students were scored on a 4-point Likert Scale from "Strongly Disagree" (1) to "Strongly Agree" (4). Most participants thought Facebook would be useful in their courses ( $M=3.0$ ,  $s=.55$ ), and could specifically improve communication among students in courses ( $M=3.40$ ,  $s= 0.56$ ) and between students and professors ( $M=3.0$ ,  $s= 0.77$ ). Participants did not have a strong preferences for Facebook<sup>®</sup> over WebCT<sup>®</sup> discussion tools ( $M=2.68$ ,  $s= 0.88$ ). The respondents also did not have strong agreement with the item that the use of Facebook in a course would be a distraction ( $M=2.62$ ,  $s= 0.84$ ).

Overall, the open-ended items revealed that participants were largely in favor of the possible use of Facebook as a tool in their higher education courses. The major objections from participants came in two categories, distractions and privacy. Fifty-seven of the participants made comments indicating that Facebook would possibly be a distraction. One individual felt that, "it would be too tough to study while I could be talking with my friends". Another wrote, "I use Facebook as an escape from school."

Regarding the open-ended items, virtually all of the 110 participants (97) had both positive and negative responses to using social networking sites in the classroom. Positive responses were largely grouped into two categories, convenience and increased communication between students. Most participants felt that the communication between students was the largest benefit (66). As one participant described, "if I were unclear about an assignment, I could write a classmate for clarification". Another stated, "it would be more interactive than WebCT and you could discuss things easier." Similarly, 25 participants identified the convenience of using a social networking site as a potential benefit. One respondent noted, "I am usually on Facebook anyway so if my course was on there, it would be easier to focus on the school work." Additionally, thirteen of participants perceived the tools, including games, quizzes and flashcards as possibly beneficial. Other comments included the feelings that the layout was more easily manageable than a typical course program, like WebCT<sup>®</sup>.

Of the negative views, the most common response dealt with some sort of distraction (54). "It may be a huge distraction because there is so much more that Facebook is used for than just school." The second largest negative response dealt with issues of privacy, both among students and professors (33). "I don't think I would like instructors to see my facebook. I think your personal life should not be an instructors problem. Some instructors could judge from what they see on your facebook." Additionally, participants were worried about not everyone having a Facebook page (5), issues of reliability (5) and online security (3).

## Discussion

The data collected in the study suggest that the respondents were largely supportive of using a social networking system in their courses. However, the responses also suggest that some activities are more likely than others to be valued by the students.

### *Student Use of Social Networking for Academics*

Few participants reported currently using social networking sites for school tasks. In some cases, this appeared to be an intentional separation of school and social lives and in other cases this was simply due to the fact that social networking is not a common tool for course work at this time. The survey data illustrate that use of Facebook for communication with classmates occurs less frequently than communication with family and friends. Further, using social networking to communicate with an instructor is a rare occurrence. As Facebook is, first and foremost, a social technology, these results are not surprising and do not necessarily diminish the potential for academic uses of social networking systems. However, the fact that academic uses of social networking has not emerged as a common use, even within an academic institution, should be a reason to carefully consider whether students perceive a necessary separation of school and social life.

### *Perceived Value of Social Networking Systems in Courses*

Though few students are currently using social networking systems for academic purposes, many students found potential benefits to their course work. Most of the reported potential benefits were regarding the ease and convenience of communicating via Facebook. In response to the survey items where students were asked to rate the likelihood that they would participate in several types of activities available in social networking systems, in all cases a majority of respondents said they would "like participate" or they would "definitely participate." However, there was a notable disparity in responses to the likelihood of communicating with an instructor via Facebook with only a slight majority likely to participate.

The narrative responses to the survey provide additional insight into the student perceptions of social networking tools in course work. One participant clearly described the desire for a separation of school and social activity by stating that, "I would not like the mixture of school and leisure activity." Among the perceived benefit to the participants was the increased communication between students in a class. As a respondent noted, "Facebook is a great way to communicate and make connections with people and classmates, especially when you don't know them well enough to call them." Further, many participants described the convenience of communication via social networking systems. In some cases, this convenience identified a possible preference for communication via social networking sites over email. Several participants felt that, "sending messages on Facebook would be easier than emails."

The perceived benefits of other uses of Facebook in course activities were unclear. Though respondents responded favorably to the idea of using Facebook to access course notes and other course materials, these activities did not receive additional comments by respondents.

### *Perceived Barriers and Problems*

With each potential benefit of integrating social networking in course work, students also reported a closely associated drawback. A prime example dealt with the participants' favorable views on communication and at the same time, concern over privacy. As one participant wrote, "I think it is better to separate your personal life (Facebook) from your academic life (WebCT), namely personal information

about you that can be seen by strangers (I know this can happen anyway, but being able to accept or reject friends requests keeps your Facebook somewhat private).”

One specific concern of many students was the possibility of faculty being able to see students' profiles and other information intended for a more private audience such as friends or family. As one student described, “professors could talk to people who could be your next boss and what is said/done on Facebook could hinder things”. Indeed, many participants expressed the fact that their social networking pages were meant to be private expressions of themselves that they would not feel comfortable sharing with the public. While this potential privacy concern could be avoided by creating a new separate account for school (suggested by some participants), this would create another password for students to remember and would make them one further step removed from the ease and purpose of using the site.

Another concern raised in the narrative comments was the possibility of Facebook® as a possible distraction to course work. With the relatively high frequency of comments noting the possibility of this distraction (57 out of 110 respondents), the perception of this possibility is clear to students. The problem of a distraction is also related to the findings of Karpinski and Duberstein (2009) in which an inverse relationship was found between Facebook usage and both academic achievement and time spent studying. Nevertheless, the student perceptions of this possible distraction provide a good reason to urge caution when implementing an instructional approach that uses a social networking system.

#### *Promising uses of Social Networking Systems*

The survey data suggest that there is notable potential for social networking systems as an instructional tool as well as notable concerns. The following are recommendations that can be derived from these benefits and concerns.

*Facebook as a communications platform.* Facebook, and other social network systems, excel at providing an easy mechanism by which large groups of people can communicate via short postings, discussion topics, and media sharing. These features can be easily adapted for academic purposes and use tools with which the students are already familiar.

*Maintain professional distance.* It is not necessary for students and instructors to become “friends” (in Facebook terms) in order for communication and sharing. While some students may be comfortable allowing instructors and other students to view their more private profiles, this should be allowed to be student-initiated. Further, as more faculty use Facebook for personal purposes, instructors may wish to keep their profiles private as well. Instructors would be well served by addressing their policy on social network systems in the course syllabus and course introductions.

*Protect student privacy.* It is likely that students will be more accepting of social networking systems for teaching and learning when they perceive that their privacy is not threatened. For this reason, including instructions on how to use Facebook (or another tool) in such a way that students do not give up their privacy to participate will serve to alleviate this concern. Using Facebook® for academic purposes and privacy concerns are not mutually exclusive. For example, becoming part of a Facebook® group does not automatically open up your profile to every group member.

*Augment with learning management.* Simply stated, Facebook, and other social networking systems, was not designed for instructional purposes, though they do provide some similar services. It may be necessary, then, to use learning management systems or other tools to provide access to course content and other teaching and learning activities for which there is no existing feature in a social networking system. As Huang *et al.* (2008) found, not all Web 2.0 tools are equally appealing to all learning styles. Providing multiple paths to course participation may support those students whose dominant learning style is not supported by social networking tools.

*Continually evaluate efforts.* As social networking tools become further integrated into personal, academic, and professional lives, it will be necessary to continually evaluate these tools with regard to their impact on student achievement and related aspects of academic pursuits. If students respond favorably to integration efforts and these efforts result in academic success, then evaluation can focus on

developing new and innovative uses of these tools. However, if the social networking tools begin to have an adverse influence on student achievement, then clearly a new approach may be necessary.

### Suggestions for Future Research

As it stands, the popularity of social networking sites is undeniable and the educational applications of this technology remain in question. The essential question is whether popularity of social networking systems can be the impetus for effective integration into education. Student perceptions of these activities will be one key to their success and maintaining a focus on student perception as we seek to investigate the impact of these tools on learning styles, social presence, technology acceptances, and other facets known to lead toward academic achievement will help researchers develop effective instructional strategies. Future research can also benefit by focusing on investigating the degree to which student are able to negotiate between the social and academic uses of systems such as Facebook®.

### Conclusions

Though the ultimate benefits of social networking tools for teaching and learning remain largely unknown, this study demonstrates that students are receptive to possible uses of Facebook. Ultimately, we must discover whether this technology can aide our students' learning, or as one participant wrote, "using Facebook for school wouldn't help me learn more, it would probably just make me use Facebook less."

### References

- ACT College Readiness Report News Release. (2007). Retrieved July 5, 2008 from: <http://www.act.org/news/releases/2007/ndr.html>
- Boyd, D.M. & Ellison, N.B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13 (1). Retrieved March 13, 2009 from <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>
- DeSchryver, M., Mishra, P., Koehler, M., & Francis, A. (2009). Moodle vs. Facebook: Does using Facebook for Discussions in an Online Course Enhance Perceived Social Presence and Student Interaction? Paper presented at the Society for Information Technology and Teacher Education International Conference 2009, Charleston, SC.
- Duffy, T.M. & Krikley, J.R. (2004). Learning Theory and Pedagogy Applied in Distance Learning: The Case of Cardean University. P 107-142 in: Duffy, T.M. & Kirkley, J.R. (eds.). *Learner-Centered Theory and Practice in Distance Education: Cases from Higher Education*. London: Lawrence Erlbaum Associates, Publishers.
- Facebook Fact Sheet. (2008) Retrieved May 1, 2009 from: <http://www.facebook.com/press/info.php?factsheet>
- Grant, N. (2008). On the Usage of Social Networking Software Technologies in Distance Learning Education. Paper presented at the Society for Information Technology and Teacher Education International Conference 2008, Las Vegas, NV.
- Huang, W., Yoo, S., & Choi, J. (2008). Correlating college students' learning styles and how they use Web 2.0 applications for learning. Paper presented at the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (ELEARN) 2008, Las Vegas, NV.
- Jacobs, S. (2008). The Facebook Classroom: 25 Facebook Apps That Are Perfect for Online Education. Retrieved March 25, 2009 from: <http://www.collegedegree.com/library/college-life/15-facebook-apps-perfect-for-online-education>
- Jeffries, M. (ND). Research in Distance Education. Retrieved March 14, 2009 from: [http://www.digitalschool.net/edu/DL\\_history\\_mJeffries.html](http://www.digitalschool.net/edu/DL_history_mJeffries.html).
- Johnson, L. F., Levine, A., & Smith, R. S. (2009). 2009 Horizon Report [Electronic Version]. Retrieved June 12, 2009, from <http://www.nmc.org/pdf/2009-Horizon-Report.pdf>

- Johnson, L. F., Levine, A., & Smith, R. S. (2008). 2008 Horizon Report [Electronic Version]. Retrieved June 12, 2009, from <http://www.nmc.org/pdf/2008-Horizon-Report.pdf>
- Johnson, L. F., Levine, A., & Smith, R. S. (2007). 2007 Horizon Report [Electronic Version]. Retrieved June 12, 2009, from [http://www.nmc.org/pdf/2007\\_Horizon\\_Report.pdf](http://www.nmc.org/pdf/2007_Horizon_Report.pdf)
- Karpinski, A., Duberstein, A. (2009). A description of Facebook use and academic performance among undergraduate and graduate students. Poster presentation at the 2009 American Educational Research Association Annual Meeting, San Diego, CA.
- Martin, M., Mullis, I. V. S., Gonzolez, E. J., & Chrostowski, S. J. (2004). TIMSS 2003 International Science Report. TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College
- Moore, M.G. & Kearsley, G. (1996). Distance Education: A Systems View. Belmont, Ca: Wadsworth Publishing Company.
- Nasseh, B. (1997). A Brief History of Distance Education. Retrieved March 15, 2009 from: <http://www.bsu.edu/classes/nasseh/study/history.html>.
- National School Boards Association. (2007). Creating and Connecting - Research and Guidelines on Online Social - and Educational - Networking [Electronic Version], Retrieved July 2, 2009 from <http://www.nsba.org/SecondaryMenu/TLN/CreatingandConnecting.aspx>
- National Academy of Sciences. (2007). Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future. Washington, DC, The National Academies Press.
- New Media Consortium. (ND). Horizon Project. Retrieved June 12, 2009 from <http://www.nmc.org/horizon>
- Pew Internet & American Life Project. (2007). Pew Internet Project Data Memo. Social Networking Sites and Teens: An Overview. Accessed 7/05/08 from: [http://207.21.232.103/pdfs/PIP\\_SNS\\_Data\\_Memo\\_Jan\\_2007.pdf](http://207.21.232.103/pdfs/PIP_SNS_Data_Memo_Jan_2007.pdf)
- Saunders, S. (2008). The Role of Social Networking Sites in Teacher Education programs: A Qualitative Exploration. Paper presented at the Society for Information Technology and Teacher Education International Conference 2008, Las Vegas, NV.
- Stutzman, F. 2006. Proceedings from 2006 iDMAa and IMS Code Conference. University of Miami, Oxford, OH.
- UK's MySpace and Facebook Addicts. Retrieved May 15, 2009 from: [http://www.channel4.com/news/articles/science\\_technology/uks+myspace+and+facebook+addicts/613077](http://www.channel4.com/news/articles/science_technology/uks+myspace+and+facebook+addicts/613077)
- Zuckerbrood, N. (2008). Are Teachers Bad at Math? Accessed 7/03/08 from <http://cnews.canoe.ca/CNEWS/Science/2008/06/26/5993791-ap.html>
- 

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