

Using Online Social Media to Support Preservice Student Engagement

Uso de los Medios de Comunicación Social Online para apoyar la Participación de los Alumnos de Pregrado

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Abstract

The proliferation of popular social media resources, which can be accessed from laptops and mobile devices during class as well as before and after, has become a pervasive force in the lives of today's students. Consequently, it is imperative that the higher education community begin to examine how the use of these resources can affect student engagement. The results of this study indicate that there is a positive correlation between student use of a variety of social media resources and how students perceive their relationships with their fellow students and instructors as well as how they describe the overall quality of their educational experience.

Keywords: Social media, student engagement, educational technology

Resumen

La proliferación de medios de comunicación social masivos, a los que se puede acceder desde ordenadores portátiles y dispositivos móviles durante las clases, así como antes y después, se ha convertido en una fuerza dominante en la vida de los alumnos de hoy. En consecuencia, es imperativo que la comunidad de educación superior comience a examinar cómo el uso de estos recursos puede afectar la participación del alumno. Los resultados de este estudio indican que existe una correlación positiva entre el uso de una variedad de medios de comunicación social y cómo los alumnos perciben las relaciones con sus compañeros e instructores, así como la forma en que describen la calidad general de su experiencia educativa.

Palabras clave: Medios de comunicación social, participación de los estudiantes, tecnología educativa

Introduction

Shortly after the turn of the millennium, a new way to characterize the change in how users interacted with websites began to appear. In 2004, the term "Web 2.0" became a popular characterization of websites that allowed users to interact with each other as contributors to a website's content. These new features that facilitated user engagement, collaboration, and interactive information sharing were a significant departure from traditional websites that were limited to the passive viewing of information (McLoughlin & Lee, 2007). The Web 2.0 moniker has now been applied to a plethora of social media websites that rely heavily on the active engagement of their users to create, manipulate, and share content.

While the education community was initially slow to embrace these resources, as many of these websites were often blocked by school Internet-filtering software (Deibert, Palfrey, Rohozinski, & Zittrain, 2008), the overwhelming popularity of these social media sites has caused educators to start exploring how these tools can contribute to the educational experience. One decade into the new millennium, a new era of teaching and learning is on the rise as student-centered, technologically and socially rich resources promises to change both pedagogy and andragogy (Baird & Fisher, 2006). The 'social' element of these social media resources supports the development of learning environments that offer learners the ability to connect, interact, and share ideas in efficient and effective ways. The educational use of these resources has the potential to foster a radical and transformational shift in teaching and learning as we know it (McLoughlin & Lee, 2007).

Social Media

Social media is characterized as Web 2.0 resources that emphasize active participation, connectivity, collaboration, and sharing of knowledge and ideas among users (McLoughlin & Lee, 2007). Social media resources can be divided into three distinct categories. While one category emphasizes content sharing and organizing sites like Delicious, Digg, Flickr, YouTube, and RSS readers, the second category

encompasses content creation and editing websites such as Blogger, Google Docs, Wikipedia, and WordPress. The third category includes social network sites (SNS) like Facebook, Ning, MySpace, Twitter, and Orkut, that serve as online communities that enable users to connect with old or new friends, and share ideas and resources.

Social network sites are defined 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 (Boyd & Ellison, 2007). While the initial goal of many of these sites was purely social as they provided a means to connect with old friends and make new friends, there is a growing body of research that indicates that students have integrated SNS into their academic life as a tool for communicating with classmates about course-related topics, coordinating study groups, and collaborating on assignments (Salaway, Caruso, Nelson, & Ellison, 2008).

Using social media to support educational endeavors leverages the benefits of in-person learning communities with the benefits of using technology to support student engagement. Previous research has indicated that learning communities can have a positive impact on student learning and the level of university student interaction and cooperation (Tinto, 2000). Along with supporting the formation of professional learning communities, social media has the potential to reap the benefits of using technology for academic purposes (Zhao & Kuh, 2004). Research has indicated that there is a positive relationship between academic uses of technology and the occurrences of active and collaborative learning, and the frequency of student-faculty interactions (Laird & Kuh, 2005). Both of these benefits are considered to contribute to the level of student engagement, which has been determined to significantly impact student success (Kuh, 2001a, 2001b).

The dynamic nature of these social media tools allow learners to become active participants or co-producers rather than passive consumers of content, so that learning is a participatory and social process (McLoughlin & Lee, 2007). In addition to heightening student engagement, the effective use of social media resources can result in a constructivist learning environment which allows students to share their interpretations of the course content, and utilize their individual life experience and multiple intelligences, while working as a part of a collaborative team (Baird & Fisher, 2006).

As educational resources, social media tools can also be used to differentiate the learning process. The plethora of available social media resources allows learners to select and share learning materials that best meet their learning style and interests. While some may choose text-based content found through social bookmarking sites like Delicious or Digg, others may prefer to use photographic images or video content located on Flickr or YouTube to support their learning. By selecting multiple social media resources, instructors can create differentiated learning paths that can be bundled together to create dynamic learning modules. These personalized and customized learning experiences may be better suited to address the diverse needs of today's learners (Baird & Fisher, 2006; Christensen, Horn, & Johnson, 2008).

The public nature of most social media resources can also be used to support authentic learning opportunities. While private learning spaces can often be secured when using these public tools, remaining in the public sphere allows learners to benefit from the contributions of other learners outside of the confines of the course, as well as with noted experts and practitioners within these content areas.

The dynamic and engaging nature of many social media resources may also encourage students to expend more time and energy on their academic activities as a consequence of the collaborative, constructivist, and authentic learning opportunities they can create (Kennedy, 2000). As a result, when students are engaged there is a greater likelihood of increased rates of student persistence and improved academic achievement (Kuh, Kinzie, Cruce, Shoup, & Gonyea, 2007).

While many students have instinctively blazed the path towards using social media to support educational endeavors, educators are now beginning to realize that these tools have the potential to positively affect student engagement and consequently academic achievement.

Student Engagement

Student engagement represents both the time and energy students invest in educationally purposeful activities (Kuh et al., 2007). These activities include times spent interacting with their peers and instructors as well as time engaging in active and collaborative learning activities (Kuh, 2001a). These items are essential not only because previous research has shown that these factors are positively

related to academic success in college and university, but also because these elements represent student behaviors and activities that institutions can influence to varying degrees through teaching practices and creating other conditions that foster student engagement (Kuh et al., 2007). Consequently, by institutionalizing practices that increase the time and energy students spend engaging in these types of activities, student engagement may increase. This increase in student engagement may also increase the likelihood that students will persist in their academic coursework. Increased academic persistence would inevitably have a favorable impact on their continued progress toward degree completion and promote academic success in comparison to the low engaged student (Kuh et al., 2007; Umbach & Wawrzynski, 2005).

The nature of student-faculty interaction can have significant repercussions for student motivation and involvement, as having positive and personal interactions with instructors can enhance a student's intellectual commitment while providing the support needed to help students overcome academic challenges (Chickering & Ehrmann, 1996). Social media can be used to enhance and increase the number of interactions students have with their instructors by overcoming the barriers of time and location. As a result, the opportunities for students to ask questions, as well as get resources and feedback from their instructors may increase. In addition to often being more convenient, Chickering and Ehrmann (1996) note that technology can also create a less intimidating means of student-faculty interactions than asking questions in front of a large lecture hall of classmates.

Similar to the impact technology can have on student-faculty interactions, social media can also enhance the nature and frequency of student-student interactions. Student engagement is enhanced when students have the opportunity to work with their peers, share ideas and resources, and reflect on the different perspectives their fellow students bring to class (Chickering & Gamson, 1987). Social media provide a great benefit to the current generation of university and college students as these tools were created with the primary intent of facilitating sharing, discussion, and collaboration. As noted earlier, social media can be used to support the creation of supportive social networks and learning communities. The perception that a student is a part of a caring and supportive campus environment not only reduces feelings of isolation, but has been identified as a factor that contributes to increasing persistence rates and academic success for at-risk students (Kuh et al., 2007).

Besides enhancing the student-faculty and student-student interactions that are paramount to the creation of a supportive campus environment, social media can also be used to facilitate the active and collaborative learning experiences that can have a positive impact on student engagement. In their frequently cited paper that outlines the principles for good practice in undergraduate education, Chickering & Gamson (1987) eloquently note that:

“Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves (Chickering & Gamson, 1987).”

The interactive nature of many Web 2.0 social media tools allows learners to become active participants who co-construct the learning experience with their peers and instructor, as they share and reflect on their individual interpretations and experiences to create an educational ‘mash-up’ (Baird & Fisher, 2006; McLoughlin & Lee, 2007).

Purpose

While previous research has noted that there is a positive relationship between the use of educationally purposeful information technology and student engagement (Laird & Kuh, 2005; Zhao & Kuh, 2004), a re-examination of these findings is needed not only because of the newness of some of these Web 2.0 resources, but also because many of these social media tools engage users in fundamentally different ways from previous education technology resources. More importantly, the proliferation of these resources, which can be accessed via laptops and mobile devices during class as well as before and after, highlights how the use of many of these social media resources has become a pervasive force in the lives of today's students (Salaway et al., 2008). As a result, the intent of this research is to provide some preliminary insight into the impact social media use can have on student engagement.

Methodology/Data Sources

The participants in the study were students enrolled in an eight-month preservice teacher education program at Brock University, a mid-sized university located in Ontario, Canada. In Ontario, all teachers

are required to have at least two bachelor degrees, a BA or BS, in addition to a BEd. Consequently, to gain entry into the preservice education program, candidates must have previously completed an undergraduate degree with a record of high academic achievement. At the completion of the preservice program students receive a Bachelor of Education degree and are certified to teach a variety of subjects at the elementary or secondary level.

The 675 students enrolled in the preservice teacher education program were divided into 24 cohort groups. Students within each cohort group take many of their courses together including a weekly session where they meet with the faculty advisors who are responsible for preparing the students for their practicum experience.

The students were invited by e-mail message to complete an online survey that mimicked the questions posed on the National Survey of Student Engagement (NSSE). The NSSE is a well-established survey instrument used by hundreds of North American colleges and universities. It was designed with the sole purpose of assessing the extent to which students are engaged in empirically derived good educational practices (Kuh, 2001a). Consequently, the results from the NSSE have been used to create institutional, national and international benchmarks of effective educational practices that support student engagement. Similar to the NSSE, the student engagement survey used in this study asked a variety of questions related to student engagement, program quality, and the use of technological resources. Of particular interest to this paper, participants were asked to describe:

- Their frequency of use of a variety of social media resources to discuss/complete an assignment or to work with classmates outside of class to prepare class assignments;
- The nature of their relationships with their fellow students and their instructors;
- How they would evaluate the quality of instruction they received;
- How they would evaluate their educational experience in the teacher education program.

The questions inquiring about the students' frequency of use of social media resources provided examples that included e-mail, Sakai, the Brock Learning Network (BLN), Twitter, wikis, Facebook etc. While e-mail, Twitter, Facebook and wikis are common social media resources, the BLN and Sakai are resources that are germane to learning at Brock University. Similar to Blackboard or WebCt, Sakai is an open-source course/learning management system used at over 160 universities and colleges across North America.

The Brock Learning Network (BLN) was created in 2008 as a means to facilitate interaction and communication between the faculty, staff, and students that comprise the Faculty of Education at Brock University. Many cohorts in the Teacher Education Department created group pages on the BLN where group announcements and information was posted on a weekly basis, thus making the BLN the central repository of essential information. Some cohorts even required their students to create a minimum number of reflective blog entries as a part of their course requirements.

An open source program, Drupal 6.0, was used to create the BLN site that mimicked many of the features of Facebook while providing access to useful resources for academics, educators and education students. Similar to Facebook users could create individual or group blogs that included text, photos and video, post comments, share resources, vote on polls and engage in asynchronous discussions. The site also included a front page that featured the Faculty of Education's news and announcements as well a central calendar that listed the important dates and events for the community. During the 2009 academic year users created over 900 individual or group blog posts. This resulted in the site receiving over six thousand visits and close to sixty-thousand page views. This translated to close to 100 site visits a day where users spent an average of five minutes and 56 seconds on the site.

Results

Of the 675 students enrolled in the preservice education program, 269 completed the student engagement survey. To note the frequency of use of a variety of social media resources to discuss/complete an assignment or to work with classmates outside of class to prepare class assignments the participants were asked to indicate if they used e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc., very often, often, sometimes or never (See table 1). While the majority of the respondents indicated that they had 'often' used an online media to work with classmates outside of class there was only a small majority that indicated that they 'sometimes' used online media to discuss or complete assignments.

Table 1. *Frequency of Social Media Use*

Survey Question	Very often	Often	Sometimes	Never
Used online media (e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc.) to work with classmates outside of class to prepare class assignments.	25.3%	34.9%	29.8%	10%
Used online media (e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc.) to discuss or complete an assignment.	21.9%	32.3%	34.2%	11.5%

To capture the nature of their relationships with their fellow students and instructors, the participants were asked to select a number from one to seven that best represents the quality of their relationships with people in the teacher education program (See table 2).

Table 2. *Relationship Quality*

Select the number (1-7) that best represents the quality of your relationships with people in the teacher education program.
Unfriendly (1)
Unsupportive (2)
Sense of alienation (3)
Neutral (4)
Friendly (5)
Supportive (6)
Sense of belonging (7)

When asked what number best represents the quality of their relationships with their fellow students the mean was 6.16. When asked the same question about their relationship with instructors the mean was 5.75.

When asked to evaluate the quality of instruction they received and the overall program quality, the participants were asked to indicate if the quality was excellent, good, fair or poor (See table 3). For both questions, the majority of the participants indicated that they felt the quality of instruction and the overall program quality was 'good'.

To determine if there was a relationship between the variables a series of correlations were completed. The analysis highlighted that there were statistically significant relationships between the frequency of use of social media resources and how the participants described the quality of instruction and overall program quality (See table 4).

In an attempt to understand the correlation between social media use and teacher candidate perceptions of their relationship with their peers, a Spearman's rho correlation was performed. While the results indicated that there was a statistically significant relationship between the frequency of social media use to work with classmates outside of class and how the teacher candidates characterized their relationship with their peers, a statistically significant correlation was not apparent when examining the frequency of social media use to discuss or complete assignments (See table 5).

Similar to the previous correlation analysis, the results indicated that there is a statistically significant correlation between the frequency of social media use to work with classmates outside of class and the teacher candidates' characterization of their relationship with their instructors. Once again the same

correlation was not apparent when examining the frequency of social media use to discuss or complete assignments and their description of their relationship with their instructors (See table 6).

Table 3. *Instruction/Program Quality*

Survey Question	Excellent	Good	Fair	Poor
Overall, how would you evaluate the quality of instruction you have received in the teacher education program?	22.7%	56.1%	17.8%	3.3%
Overall, how would you evaluate your entire educational experience in the teacher education program?	24.9%	51.7%	18.9%	4.5%

Table 4. *Correlation of Frequency of Social Media Use and Instruction/Program Quality*

		Overall, how would you evaluate the quality of instruction you have received in the teacher education program?	Overall, how would you evaluate your entire educational experience in the teacher education program?
Used an online medium (e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc.) to discuss or complete an assignment.	Pearson Correlation	.156**	.160**
	Sig. (2-tailed)	.011	.009
Used online media (email, Sakai, BLN, Twitter, wikis, Facebook, etc.) to work with classmates outside of class to prepare class assignments.	Pearson Correlation	.138*	.170**
	Sig. (2-tailed)	.024	.005

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Discussion

With a greater number of students using social media to interact with their classmates outside of class to prepare assignments rather than using these same resources to discuss or complete assignments, the results highlight the 'social' nature of social media resources. These findings support previous research that indicated that students tend to use the Internet to communicate with other students (Hu & Kuh, 2001; Laird & Kuh, 2005) more so than to actually complete their coursework. Consequently, it is not surprising that there was a correlation between the frequency of social media use and the nature of the relationship teacher candidates had with their peers. Using social media to interact with their peers may provide students with greater opportunities to get to know their peers and in turn develop a positive relationship with them. In addition to enhancing the perception of a supportive campus environment, having a positive relationship with their peers can be essential to the creation of learning communities where students are at ease with one another so that they may work collaboratively, freely share opinions and respond constructively to the ideas of their fellow students. These conditions are a necessary prerequisite for the critical thinking that supports learning to occur (Chickering & Gamson, 1987).

Table 5. *Correlation of Frequency of Social Media Use and Relationships with Other Teacher Candidates*

		Relationships with other teacher candidates
Used online media (e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc.) to work with classmates outside of class to prepare class assignments.	Spearman's rho Correlation Coefficient	.121**
	Sig. (2-tailed)	.047
Used an online medium (e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc.) to discuss or complete an assignment.	Spearman's rho Correlation Coefficient	.089
	Sig. (2-tailed)	.147

**Correlation is significant at the 0.01 level (2-tailed).

Table 6. *Correlation of Frequency of Social Media Use and Relationships with Instructors*

		Relationships with instructors
Used online media (e-mail, Sakai, BLN, Twitter, wikis, Facebook, etc.) to work with classmates outside of class to prepare class assignments.	Pearson Correlation	.129*
	Sig. (2-tailed)	.034
Used an online medium (e-mail, Sakai, BLN, twitter, wikis, Facebook, etc.) to discuss or complete an assignment	Pearson Correlation	.102
	Sig. (2-tailed)	.095

*Correlation is significant at the 0.05 level (2-tailed).

While this study did not specifically ask the participants if they used social media to interact with their instructors, there appears to be a correlation between the frequency of social media use to interact with their classmates outside of class to prepare assignments and the nature of the relationship teacher candidates have with their instructors. This surprising finding may support Laird and Kuh's (2005) conclusion that engagement in one area, such as student-faculty engagement, often goes hand-in-hand with engagement in other areas. This notion suggests that engaged students will take advantage of all of the available resources, including technological and social media resources (Kennedy, 2000), to enhance their educational experience. Unfortunately, the reverse assumption is that low engaged students may fail to capitalize on the opportunities that social media provides to increase their level of engagement. Regardless, student-faculty interaction is noted as one of the key contributors to high student engagement (Chickering & Gamson, 1987; Kuh, 2001b; Kuh et al., 2007) and using social media to enhance student-faculty relationships can have positive educational consequences (Chickering & Ehrmann, 1996).

As in many professional training programs, such as preservice teacher education, the bar to gain admittance is often set quite high. As a result, the cumulative grade averages and graduation rates are also quite high. In this context it would not be useful to investigate if there was a correlation between social media use and academic achievement. Instead, questions regarding student perceptions of the

overall quality of instruction they received and overall educational experience were asked. The results indicated that there was a correlation between the frequency of use of social media resources and how the participants described the quality of instruction and overall program quality. This finding may be a consequence of the positive relationships students noted that they had with their peers and instructors which often enhances almost all aspects of learning and academic performance (Umbach & Wawrzynski, 2005) or that the use of these tools may have facilitated the creation of learning communities that has been shown to have a positive impact on student learning (Tinto, 2000). The results may have even been influenced by the impact of the active and collaborative learning experiences that social media supports (Chickering & Ehrmann, 1996) that previous research has demonstrated to have a positive impact on student engagement (Chickering & Gamson, 1987; Kuh, 2001a; Kuh et al., 2007). While further exploration is needed to understand the relationship between these factors, the findings of this research demonstrate that a relationship exists. It is hoped that these results will encourage faculty members and instructors, as well as colleges and university policy makers to consider the use of social media as an effective and efficient tool to support teaching and learning.

Conclusion

The intent of this preliminary research was to provide some insight into the impact the use of social media can have on the level of preservice student engagement. While the findings indicated that there was a positive correlation between the frequency of student use of social media and their relationship with their peers and instructors as well as how they describe the overall quality of instruction and the preservice program, the results also highlight that there are many questions still to be answered. As is so often the case with preliminary research the end result can be the formulation of more questions rather than answers. Before one can put these findings into practice one needs to consider the limitations of this study that had preservice teacher candidates as its participants. Preservice students generally have a long history of positive educational experiences and high academic achievement. Thus, the conclusions may not be generalizable to the general undergraduate student population. Despite this, the results may be useful to instructors and administrators that work primarily with students enrolled in professional programs.

While the reliability and validity of the questionnaire used in this study was not established, the questions included were closely modeled on the format of the National Survey of Student Engagement (NSSE) instrument whose psychometric properties have been well documented (Kuh, 2001b). Similar to the impact of the NSSE, it is hoped that these results may be used to inform future research and eventually instructor and institutional practices that capitalize on the benefits of using social media to support student engagement. Once the higher education community has a better understanding of how and why students are using social media resources as part of their educational experience, this information can be used to support instructor professional development and the creation of institutionally supported social media resources.

The greatest challenge to future research and the usefulness of these results is in understanding the use or lack of use of social media resources by low engaged students. The conclusion that highly engaged students may be high users of educationally purposeful social media resources should not be astonishing to educators. There is a natural tendency for highly engaged students to make good use of all of the educational resources that are available to them (Kennedy, 2000). The challenge, is to determine how the educational community can leverage the social nature of these resources to support increased levels of interaction between high and low engaged students. Kuh et al (2007) suggests that because peers are very influential to student learning and values development, educational institutions should attempt to harness and shape this influence so that it is educationally purposeful and helps to reinforce academic expectations (Kuh et al., 2007). Unfortunately, because of the newness of some of these social media tools there is little guidance as to specifically how this can be accomplished. The benefits of using social media to support teaching and learning will not be fully realized until there is a better understanding of how the social nature of these social media resources can be used to entice low engaged or disengaged students to interact in educationally purposeful ways with their high-engaged peers and instructors so that it contributes to the success of all students.

References

- Baird, D. E., & Fisher, M. (2006). Neomillennial user experience design strategies: Utilizing social networking media to support "Always On" learning. *Journal of Educational Technology Systems*, 34(1), 5-32.

- Boyd, D., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1).
- Chickering, A. W., & Ehrmann, S. C. (1996). Implementing the seven principles: Technology as lever. *American Association for Higher Education & Accreditation Bulletin*, 49(2), 3-6.
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *American Association for Higher Education & Accreditation Bulletin*, 39(7), 3-7.
- Christensen, C. M., Horn, M. B., & Johnson, C. W. (2008). *Disrupting class: How disruptive innovation will change the way the world learns*. New York, NY: McGraw-Hill.
- Deibert, R., Palfrey, J. G., Rohozinski, R., & Zittrain, J. (Eds.). (2008). *Access denied: The practice and policy of global Internet filtering*. Cambridge, MA: The MIT Press.
- Hu, S., & Kuh, G. D. (2001). Computing experience and good practices in undergraduate education: Does the degree of campus wiredness matter?, *Annual Meeting of the American Educational Research Association*. Seattle.
- Kennedy, C. (2000). Implications for new pedagogy in higher education: Can online technology enhance student engagement & learning? (Doctoral dissertation, University of California at Berkeley). Retrieved ERIC database. (ED443382)
- Kuh, G. D. (2001a). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change*, 33(3), 10-17.
- Kuh, G. D. (2001b). *The National Survey of Student Engagement: Conceptual framework and overview of psychometric properties*. Bloomington, IN: Center for Postsecondary Research.
- Kuh, G. D., Kinzie, J., Cruce, T., Shoup, R., & Gonyea, R. M. (2007). *Connecting the dots: Multi-faceted analyses of the relationship between student engagement results from the NSSE, and the institutional practices and conditions that foster student success*. Bloomington, IN: Center for Postsecondary Research.
- Laird, T. F. N., & Kuh, G. D. (2005). Student experiences with information technology and their relationship to other aspects of student engagement. *Research in Higher Education*, 46(2), 211-232.
- McLoughlin, C., & Lee, M. J. W. (2007). *Social software and participatory learning: Pedagogical choices with technology affordances in the Web 2.0 era*. Paper presented at the Australasian Society for Computers in Learning in Tertiary Education Singapore.
- Salaway, G., Caruso, J. B., Nelson, M. R., & Ellison, N. B. (2008). *The ECAR Study of Undergraduate Students and Information Technology, 2008*. Boulder, CO: EDUCAUSE Center for Applied Research.
- Umbach, P. d., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education*, 46(2), 153 - 185.
- Zhao, C.-M., & Kuh, G. D. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education*, 45(2), 115-135.

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