## **Current Literature Summary**

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Researchers and practitioners speculate that the Net Generation of students learn in a way that is fundamentally different than previous generations due to their early exposure to social media technologies. Social media provides multiple opportunities to add a new dimension to the learning process. By using social media, learners have the ability to manipulate their learning environment; thereby, actively engaging in the learning process. Learners may connect formal and informal learning processes using social networking sites. Social media has the potential to facilitate self-directed learning, which is an important skill for today's learners given the immediate availability to ever changing information resources. We will provide brief synopses of current research on social media and its impact on education and discuss possible applications to athletic training.

Wood E, Zivcakova L, Gentile P, Archer K, De Pasquale D, Nosko A. Examining the impact of off-task multi-tasking with technology on real-time classroom learning. *Comput Educ.* 2012;58:365-374.

Reviewed by Jennifer L. Doherty-Restrepo, Florida International University

Summary of research context and methods:Continuous advances in technology have resulted in smaller, more affordable, and portable digital devices that are used anywhere and anytime. Many individuals regularly use these devices to access the internet and social media platforms in every context of their lives, including the classroom. Although digital technologies may facilitate positive educational outcomes, recent research suggests that these same digital technologies can impair performance and distract learners when used inappropriately (ie, multi-tasking). The combination of availability, ease of use, and the wide range of activities available through portable digital technology has increased the possibility that learners will engage in off-task multi-tasking behaviors in the classroom. Therefore, the purpose of this study was to examine the impact of multitasking with digital technologies on student learning from real-time classroom lectures in a university setting.

These researchers conducted a quasi-experimental study with repeated measures. Four digitally-based multitasking activities (texting with a cell phone, emailing, MSN messaging, and Facebook) were compared to three control groups (paper-and-pencil note-taking, word-processing notetaking, and natural use of technology) over three consecutive lectures. Participants were aware that the content of the lectures would be on their final exam; therefore, they had a natural incentive to pay attention to material being presented. Participants (N=145) were randomly assigned to one of the aforementioned seven conditions. Following each lecture, the participants completed a 15-item multiple-choice test including factual, application, and synthesis level questions. Data were analyzed using repeated measures ANOVA.

Summary of research findings: There was no significant difference in student performance on the multi-choice test across the three consecutive lectures. This suggests that performance did not increase with increasing practice. Participants in the paper-and-pencil control group scored significantly higher on the multi-choice tests compared to those in the Facebook and MSN messaging groups. Participants who did not use any technology during the lectures outperformed those who used some form of technology. Overall, not all multi-tasking conditions resulted in poorer performance. However, based on the data, is appears that Facebook and MSN messaging were distractions that negatively impacted learning. who used some form of technology. Overall, not all multi-tasking conditions resulted in poorer performance. However, based on the data, is appears that Facebook and MSN messaging were distractions that negatively impacted learning.

Implication for athletic training education/research:Athletic training educators should be aware of the impact,both positive and negative, that digital technologies have on the educational process and learning outcomes. Educators need to be aware that the features that make multi-media technologies attractive as learning tools may also be distracters from the educational process. Future research in technology and learning should examine why learners decide to engage in off-task digital technology activities

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technology on the educational process. Athletic training educators need to identify, understand, and overcome the potential shortcomings from inappropriate use of technology in the classroom, especially since digital technologies have become standard teaching and learning tools.

Fewkes AM, McCabe M. Facebook: learning tool or distraction? *J Dig Learn Teach Educ*. 2012;28(3):92–98.

Reviewed by Matthew R. Kutz, Bowling Green State University

Summary of research context and methods: Facebook has more than 500 million users, and on average 700 million minutes are spent on Facebook per month. The increased access and availability to virtual worlds for entertainment, socializing, and education are growing and shows no signs of slowing down. School boards are making decisions to embrace the use of social media by students in the classroom or while at school. Researchers maintain that access to social media websites provide expansive opportunities that support the learning agenda and claim that the use of social media (ie, Facebook) moves beyond formal academic learning and includes corollary aspects of learning such as effective collaboration and communication. These researchers claim that the informal learning that occurs in the context of participatory social media offers significant opportunities for increased student engagement within a formal learning setting. Therefore, it is important for educators to understand how students use Facebook to support learning agendas.

These researchers conducted an exploratory, mixed method survey of Facebook users in a secondary school in Ontario Canada. Researchers used a snowball sampling technique and reported analyzing 51 completed questionnaires. A majority of respondents (58%) were female, 42% were male, and all respondents' age range was between 16 and 18 years. Respondents answered 25 Likert-type scale questions pertaining to their use of Facebook in a classroom setting. Respondents also had eight opportunities to provide qualitative responses. Qualitative responses were organized into four main themes (use of Facebook, Facebook at school, teachers and Facebook, and demographics). Quantitative analysis consisted of frequency distributions and qualitative data were analyzed using an inductive approach and thematic coding.

Summary of research findings: Ninety eight percent (98%) of students reported using Facebook between one and five years. Most respondents started using Facebook at the age of 13. Forty-two percent (42%) of respondents reported using Facebook during class time (although no indication was given if that use was for personal or academic reasons) and 73% of students claim to have used Facebook for educational purposes. Students who believed Facebook could be used to benefit education cited such reasons as easier communication with classmates, quick and easy discussion forums, group collaboration, awareness campaigns, increased self-organization, and help with homework. The students who believed Facebook could not be an educational tool cited the main reason for this as distraction. Of the students surveyed, 27% reported that at least one teacher uses Facebook to improve learning in their

classes, most often that was in mathematics. Researchers reported that students perceive the most common barrier to Facebook use in the classroom is that teachers believe it facilitates students getting off-track and that teachers lack knowledge on how to navigate Facebook.

Implication for athletic training education/research: Athletic training educators need to embrace and implement the use of technology in the classroom, especially technology that enhances student learning. Social networking may be a convenient way to get students to discuss class work and clinical experiences outside of a formal learning context. While external validity of this study is extremely suspect, by allowing athletic training students to use social networking, some may integrate information from class lectures or clinical experiences more effectively. Possible causes of this integration may include easier access to group discussions and greater collaboration. However, the risk for distraction, compromises in confidentiality, and collusion (ie, unauthorized collaboration on assignments) remains extremely high. Athletic training researchers interested in technology and learning could use this study as a springboard for developing a more robust and rigorous methodology for studying the efficacy of social networking on teaching and learning.

Junco R. The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Comput Educ.* 2012;58(1):162-71.

Reviewed by Chris Curless, Methodist Sports Medicine / The Orthopedic Specialists

Summary of research context and methods: Facebook is a popular social media platform with 85% to 99% of college student using the site. As a result of the ever-increasing college-aged user activity on Facebook, there is interest in the impact that Facebook and other social media sites have on student academic outcomes. Student engagement is one specific outcome of interest that identifies the amount of physical and psychological energy an individual devotes to academic experience.

This researcher examined the relationship between frequency of Facebook use, participation in Facebook activities, and student engagement (ie, time spent preparing for class, time spent in co-curricular activities) using a 19item Likert scale questionnaire based on the National Survey of Student Engagement. A sample of 2,368 college students participated in this study, all from medium, 4-year, public, residential institutions in the Northeast United States (44% response rate). The data were placed into six hierarchical (blocked) linear regression analyses to determine how each influenced engagement, time spent preparing for class, and time spent in co-curricular activities. The blocks consisted of demographic variables, frequency of Facebook use, and frequency of Facebook activities.

Summary of research findings: Students in this study spent a substantial amount of time on Facebook, spending an average of 101.09 minutes per day on the site and checking up on friends an average of 5.75 times per day. Facebook use was significantly predictive of the students' engagement scale score as well as time spent in co-curricular activities. Additionally, students using Facebook to comment on posts, creating or RSVP'ing to events, and viewing photos were more likely to be involved in co-curricular activities. Meanwhile, students playing Facebook games, checking up on friends, and posting photos were less likely to participate in out-of-class activities. The data also suggest that students who frequently engaged in chatting on Facebook spent less time preparing for class. Ultimately, the study concluded that Facebook use is not wholly detrimental to student outcomes and when utilized properly, can be a valuable tool in the classroom.

Implications for athletic training education/research: There has been a significant amount of interest in the implementation of social media platforms in athletic training education programs. As this investigation suggests, Facebook has become the most utilized social media platform. Based on the results of this study, Facebook is a potentially valuable educational tool if implemented properly. Incorporating features like events, educational posts, and photos can positively influence student engagement in and out of the classroom. Athletic training educators now have the ability to post an item or photo that encourages student discussion on a medium that has defined their generation. Using Facebook, educators can post co-curricular events that are often taking part of education programs. This study has shown that students RSVP'ing to these events make a virtual commitment to a real-world activity, inherently promoting engagement. The key to success will be the development of multiple Facebook activities that engage the student across the continuum of their athletic training education. Future studies should investigate how educators can implement the activities discussed and evaluate the specific effects it has on academic outcomes.

Bahner DP, Adkins E, Patel N, Donley C, Nagel R, Kman, NE. How we use social media to supplement a novel curriculum in medical education. *Med Teach*. 2012;34:439-444.

Reviewed by Stacy E. Walker, Ball State University

Summary of research context and methods: Learners today are embracing technology such as Twitter and Facebook. A majority of students in health professions prefer online media as their primary source of information. Most medical educators are not familiar with many forms of social media but awareness is beneficial for the student–educator relationship. Twitter and Facebook allow content to be "pushed" to mobile devices to reach learners.

The researchers distributed a novel ultrasound curriculum by "push technology" via social media, using Twitter and Facebook. The curriculum was designed to supplement a longitudinal four-year elective ultrasound course. Highyielding emergency ultrasound facts, images, and hyperlinks to useful resources, were delivered daily at the same time via Twitter. At the same time every day, followers of the Twitter account @EDUltrasound were pushed information. The content of the curriculum centered on an emergency ultrasound content area such as trauma, cardiac, and critical care. The Twitter account was linked to a Facebook page enabling all tweets to also be seen on that Facebook page.

Summary of research findings: The curriculum had 101 followers on Twitter and 78 on Facebook. The followers who could be identified (60%) were identified as 23 physicians, 16 corporate related, 12 students, and 4 ultrasound technicians. Many used both Twitter and Facebook to follow the curriculum. At the end of the academic year, a 10-question survey was posted. This survey was to clarify the users and efficacy of the curriculum. Of those who completed the survey, the majority were less than 30 years old (81.5%). Experience in ultrasound ranged from novice to advanced. Many of the followers (55.6%) were new to Twitter, found the twitter feed user-friendly (88.9%), the information useful (81.5%), and would like to follow more educational feeds via Twitter (52.9%). The mobile app for Twitter was the common method (80%) the information was accessed by medical followers; however, medical students used Facebook (35.3%) and Twitter (35.3%) via computer, text messages, and Facebook app. Unexpectedly, medical students (29.4%) were new to Twitter prior to this experience.

Implications for athletic training education/research: These findings indicate learners benefit from content disseminated, or pushed, through social media. Athletic training educators could use these findings to develop methods to interact with or push content to their students. Most students today have some form of a mobile device such as a smart phone or tablet in addition to a computer. Content, facts, hyperlinks, and images can be pushed to learners daily, weekly, or at certain times during the semester to supplement course and laboratory instruction. The content of the tweets can then be built into classroom and laboratory discussions. In addition, a Facebook page can be created which is linked to the Twitter account where learners can also interact with each other regarding the pushed information. Future research could investigate the educational benefit to the student such as preparedness for class or laboratory instruction as well as understanding and retaining concepts taught. It is still unclear the learning benefits of social media but this research expands on one of the opportunities as well as the need for further research.