2020

SNS as an Educational Tool: Effect on Academic Performance and Learners' Perceptions

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by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in
Information Systems

College of Computing and Engineering
Nova Southeastern University

2020

We hereby certify that this dissertation, submitted by Nawwaf Mohssen A. Altalhi conforms to acceptable standards and is fully adequate in scope and quality to fulfill the dissertation requirements for the degree of Doctor of Philosophy.

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College of Computing and Engineering
Nova Southeastern University

2020

An abstract of a Dissertation Submitted to Nova Southeastern University
in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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August 2020

With Social Networking Sites (SNSs) being extensively used by students, there has been extensive research in relation to their ability to enhance students' academic performance in various learning environments, although the advent of research on online learning is a recent development.

Studies regarding the use of SNSs indicated that there was a negative relationship between students' use of SNSs and students' academic performance. However, it is unknown whether the implementation of an instructional training course utilizing SNSs as an educational tool might lead to improvements in students' academic performance. Many students have admitted to not knowing how to properly use SNSs, especially in the context of education, but recent research has suggested that a proper online learning environment can lead to quality academic outcomes.

The purpose of this mixed method study was to determine if the implementation of an instructional training course on the effective use of SNSs as an educational tool might lead to improvements in academic performance as well as to explore students' perceptions about SNSs. This study examined the effect of the instructional training course on the effective use of SNSs and the academic performance of 69 students in the Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia.

Data were collected using a pre-survey and post-survey distributed among students in the MIS course at TU in Saudi Arabia, while their associated learning outcomes data were also reviewed to assess whether there was a significant improvement in test scores.

One-way analysis of covariance (ANCOVA) revealed that the learners who were subjected to SNS programs recorded high scores in midterm 2 than in midterm 1. Also, more than half of the participants reported that SNSs had a positive effect on students' academic performances. The participants argued that SNSs improved their creative thinking through interaction with experts in the field.

The findings of this study suggest that teachers need to develop templates that will guide students on how to positively use social media in classrooms.

The significance of the study is that it sheds light on how an instructional course helped students integrate SNSs into their studies within the context of an online environment.

Acknowledgement

I would like to thank my parents, my wife, my daughters, and my brother for their endless support during my PhD program. They have given me love with encouragement to reach my dream throughout this endeavor.

Also, I am grateful and thankful to my dissertation chair, Dr. Ling Wang, for her support, and guidance during my dissertation process. Her expertise in research, especially in research methods, helped me to gain more knowledge and insight about research in Information Systems (IS) field. I would like to thank Dr. Marti Snyder, and Dr. Inkyoung Hur for their valuable feedback and suggestions. They helped in improving the quality of my work and getting the work done with their professional experience in IS research.

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Chapter 1

Introduction

Background

Social networking sites (SNSs) are valuable tools to many individuals in modern society. Social networking sites allow individuals to communicate with others in online communities (Boyd & Ellison, 2007). These communities can consist of close friends and family members or coworkers and simple acquaintances. Social networking sites also allow individuals to connect with others who have similar interests even if there is no close relationship between the two individuals. Social networking sites are typically Web-based and rely on a diverse means of communication to connect individuals. Such forms of communication include tools such as chat messaging, video conferencing, and file sharing. Social networking sites play a big part in the development and learning process for adolescents, with many children using social media as a part of their daily routine. Recently, researchers have pointed out that an online learning environment consisting of both traditional and online educational content may be highly beneficial for promoting quality learning through discussions that students are able to enjoy much more (Han & Ellis, 2019). It remains to be seen whether social media and elements of the traditional classroom can also be amalgamated in order to create a productive online learning environment.

Over time, the popularity of chat, video conferencing, and file sharing services has increased, yet there continue to be millions of people who visit social networking sites. Global Digital Statistics (n.d.) indicated that 1.8 billion people who use the Internet

have accounts on one of several major SNSs around the world. From the early 2000s onward, sites such as Facebook, Twitter, and YouTube emerged as some of the major outlets for information sharing, collaboration, and creative expressions (Dabbagh & Kitsantas, 2012; Hong & Shaoi, 2012). As such, the use of SNSs often occurs across one of these three platforms, though the use of SNSs goes beyond these platforms.

Researchers indicated that there was problematic use of the Internet, including social networks, characterized by the misuse of online services as well as a declining ability to use them properly (Cao, Masood, Lugman, & Ali, 2018). The literature also indicated that excessive use of the Internet could lead to overload and exhaustion among students (Yu, Shi, & Cao, 2019). Studies also suggested that the use of these services might act as a distraction that reduced the motivation of students to study (Alkaabi, Albion, & Redmon, 2017). As such, there may be a role for courses designed to help students understand how to effectively use these services and maintain their academic performance.

Previous research indicated that there were numerous ways that the use of SNSs may negatively impact student performance (Hassell & Sukalich, 2016; Junco, 2015; Michikyan et al., 2015). However, it remains unknown whether an instructional training course can assist students in optimally utilizing SNSs in a variety of academically positive ways, including as an educational tool that helps improve academic performance. When appropriately used, SNSs may be able to positively impact academic achievement when integrated into a blended learning environment.

Blended learning environments are designed as a combination of traditional learning paired with digital electronic tools and that complement face-to-face classroom

instruction (Kumar-Basak, Wotto, & Belanger, 2018). Blended learning at its best is a careful integration of classroom experiences with online learning experiences (Garrison & Kanuka 2004). However, it is not synonymous with other types of online learning.

Blended learning is not the same as a fully online learning experience, which transitions the class entirely to the online environment. It is also not the same as an enhanced classroom, which attempts to make a traditional classroom environment one that also includes digital technologies within it. Blended learning is instead a combination of traditional learning in the classroom with an online component taking place away from the traditional classroom at a student's own pace (Bowyer & Chambers, 2017). It remains to be seen, however, whether students can adequately integrate SNSs in a blended learning environment without some of the associated negative consequences if they have undergone a class meant to help them properly manage their SNSs use.

Problem Statement

The problem that exists is that it is currently unknown whether an instructional training course guiding students in the use of SNSs, as an academic tool is effective at increasing students' academic performance. Previous research indicated that SNSs could negatively impact academic performance (Hassell & Sukalich, 2016). Students were often distracted during the course of their studies. Students reported using SNSs services, including Instagram, Facebook, Skype, and YouTube, for non-academic purposes during class time, which had the potential to impact their performance (Alkaabi, Albion, & Redmond, 2017). However, students distracted themselves with SNSs use in a variety of contexts, including mobile use (Cao et al., 2018) and the use of SNSs to multitask during study time (Junco, 2015).

However, the potential benefits of blended learning environments have been pointed out by previous research (Han & Ellis, 2009). Although students tend to perceive SNSs as exclusively a source of distraction, the rationale is that an instructional measure such as a training course may support students in to learn the proper use of SNSs more effectively. In fact, students often indicate that they are uncomfortable using SNSs for study purposes because they are unfamiliar with how to use or even conceptualize the services as a learning tool (Churcher, Downs, & Tewksbury, 2014). An appropriate instructional course may help students to better understand how to integrate SNSs into their studies within the context of blended coursework. This study investigated the integration of SNSs in students' learning environment in an experimental setting.

Dissertation Goal

The first goal was to develop an instructional training course on how to effectively use SNSs to support learning. The second goal was to determine whether this kind of course, when delivered in a blended format, impacts students' academic performance. The third goal is to explore students' perceptions about SNSs use as an educational tool. The study was directed at those students enrolled in blended learning course in the MIS department at TU in Saudi Arabia. Moreover, this study sought to establish possible solutions, which can be integrated into information systems as a major in higher education learning to improve the integration of SNSs in higher education institutes. This goal was reached by determining if the implementation of an instructional training course, in effective SNSs use as an educational tool, has a significant effect on students' academic performance. The proposed training course included an instructional

module rooted in constructivism learning theory and include an emphasis on SNSs such as WhatsApp and Twitter (Flynn, Jalali, & Moreau, 2015).

The study investigated whether SNSs can serve as primary pedagogical tools and means of communication inside and outside the academic environment. If SNSs can be used to the advantages of the instructor, then the frequency with which individuals access these SNSs may be taken advantage of to help students stay efficient with their time. The assumption is if a SNSs network is implemented for academic purposes, it may alter students' overall attitude regarding using SNSs as an 'escape'. Students may also take the initiative to use SNSs for academic purposes without being instructed (Lam, 2017). It may also be possible to use SNSs to help guide students through the intervention to improve time management skills and minimize their time spent on SNSs platforms in class for non-academic purposes. The intervention would be executed in the three SNSs platforms: WhatsApp, Twitter, and classroom monitors with an aim for students obtaining and maintaining better grades.

Research Questions and Hypothesis

To guide the study, the following research question and hypothesis were developed.

RQ1: Will the implementation of an instructional training course in effective SNSs use as an educational tool affect Saudi Arabian students' academic performance in blended learning environment?

RQ2: What are the learners' perceptions regarding the effectiveness of SNSs use as an educational tool?

Hypothesis: The implementation of an instructional training course in effective SNSs use as an educational tool will have a statistically significant effect on Saudi Arabian students' academic performance (as measured by students' grades) in a blended learning environment.

The conceptual map below depicts the hypothesized relationship as described in the proposed research question and hypothesis above.

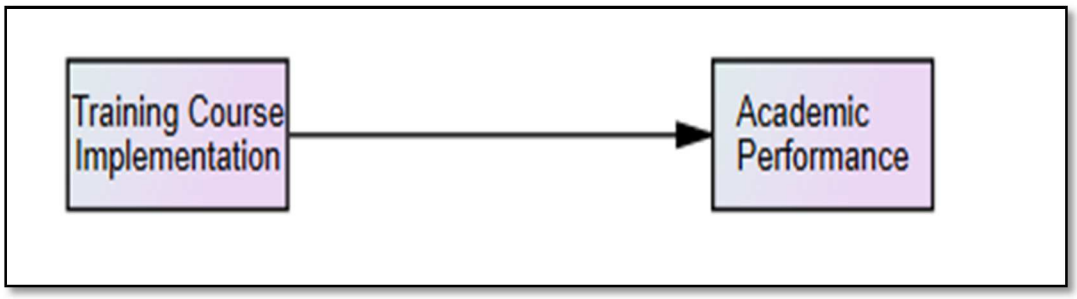

Figure 1. Conceptual Research Model.

Relevance and Significance

The significance of the study is that it will shed light on whether an instructional course can help students integrate SNSs into their studies within the context of a blended environment and to explore students' perceptions about SNSs use as educational tool. The existing research indicated may negatively impact the academic performance of students (Alkaabi et al., 2017; Cayo et al., 2018; Hassell & Sulkalich, 2016). However, the current study might provide data indicating that academic performance can be improved when SNSs is present following the introduction of a learning intervention meant to improve how students use SNSs. The findings would be significant because they could then contribute to the development of instructional systems meant to improve the use of SNSs among students. These systems could lead to improved academic

performance as students are better equipped to manage their SNSs use instead of using it in such a way that their usage is too intense or distracting from the completion of studies.

Limitation and Assumptions

One of the primary limitations of the study was the potential for confounding factors to complicate the findings. Pre-survey data reflected a span of time leading to the initial assessment, with performance potentially influenced by several factors. Similarly, post-survey data may be influenced by numerous factors. For instance, between the first and second assessment, students could simply adapt to the class and adjust to the challenges independent of the intervention. As such, the internal validity of the study could suffer.

Another problem that could arise would be the issue of generalizability, given that the study took place only within a single class that has two sections to perform an initial test of the intervention developed to help improve student use of SNSs in a blended instructional environment. Given that the study used only pre-survey and post-survey of a single class, the findings might not be generalizable to the larger student population. There may be characteristics to this class that causes them to adapt quickly between pre-survey and post-survey. The class itself may also not be demographically representative of the larger student population across Saudi Arabia, limiting the ability for the findings to be generalized across that population. However, since there is a substantial level of change in higher education in Saudi Arabia requiring institutions to be blended and dependent on technology including the use of SNSs and social media, which is the reason why the setting of Saudi Arabia was appropriate for this study. Also, the researcher is an

assistant teacher in the MIS department at TU and he has access to students' data in TU's campus.

In addition to the limitations of the study, there would also be certain assumptions made that underpin the study. The three most common assumptions that researchers make are ontological, epistemological, and axiological in nature. Ontological assumptions refer to the nature of reality, epistemological assumptions refer to what can be known, and axiological assumptions refer to what is important in research (Grix, 2018).

Ontological assumptions are assumptions made about the nature of reality and what we can know about it. In a quantitative study, the research assumes that reality is objective and can be measured using objective measures. Objective measurements of reality are applied in a quantitative study, with quantitative data drawn from measurements of outcomes. Quantitative data are generated from measurements including quantitative-based surveys and statistical methods used to determine relationships. In the context of the current study, the data generated is from using objective testing measurements to gauge student performance both before and after the introduction of a treatment meant to improve the use of SNSs during studying.

Epistemological assumptions refer to those assumptions made regarding the knower and the object of study. In quantitative research, it is assumed that the knower is distinct from the object of study. In quantitative research, it is assumed that the researcher is distinct from the study population. This distinction is maintained through the use of objective measurements that minimalize interactions between the researcher and what is being researched. This contrasts with qualitative research, in which the researcher interacts with the subject during the course of an interview process. Within the context of

the current study, the researcher remained distinct from the subject population because the data collected by instructors in the MIS department at TU and returned to the researcher for analysis.

Axiological assumptions refer to those assumptions made regarding a learner's values and their relationship to the data. In quantitative research, it is assumed that the learner's values do not influence the outcomes of the data. This is accomplished by using objective means of arriving at conclusions, such as statistical analysis, which minimizes the chance for the researcher's values to influence the conclusions. This is in contrast to qualitative research, in which the researcher must often interpret qualitative data, arriving at conclusions partly influenced by personal values, due to the fact that there are no objective tools for reason conclusion. In the context of the current research, the influence of the researcher's values was minimized because the instructors collected the data and the researcher analyzed the data using quantitative approaches.

The researcher also made a methodological assumption that the specific type of research method was best suited to the current study. In the context of this study, the researcher assumed that the pre-survey and post-survey approach was the most appropriate for assessing whether a tailored treatment improves the ability of students to use SNSs in a blended classroom environment. The researcher made the assumption regarding the rationale of methodology because it was important to gauge the performance both before and after the introduction of the treatment. The differences in the score could be best gauged by assessing the performance of the students both before and after the treatment's introduction using a pre-survey and a post-survey method.

The researcher, therefore, made four major assumptions. The researcher first assumes that the pre-survey and post-survey methodology was best suited to assessing the effectiveness of a treatment introduced to a classroom. The researcher also assumed that the variables in the study were measurable, that the researcher was distinct from the population under study, and that the data could be analyzed while minimizing the potential bias that might result from the researcher's participation in the study.

Definition of Terms

Social Networking Sites (SNSs). Social networking sites are online services, consisting of multiple tools, that facilitate online communities consisting of friends, family, coworkers, acquaintances, and people of similar interests (Boyd & Ellison, 2007).

Blended Learning (BL). Blended learning is a form of learning that integrates online, distance-based learning with learning that occurs in the classroom using digital electronic tools (Kumar-Basak et al., 2018).

Online Learning (OL). Online learning is any learning that takes place using an online environment, though online learning can be entirely online based, integrated within a classroom, or used in tandem with separately conducted classroom learning (Garrison & Kanuka, 2004).

Summary

The purpose of this mixed method study experimental, which has a pre-survey and a post-survey, was to determine if the implementation of an instructional training course was effective in increasing students' academic performance. Previous research suggested that there were positive and negative aspects to integrating SNSs into research, though researchers warned that the use of SNSs, particularly when used as part of

multitasking, led to negative academic outcomes (Junco, 2015). The use of SNSs to an excessive degree was also linked to overload and exhaustion among students (Yu et al., 2019). As such, the research suggested that the study may benefit from having an intervention designed meant to help them appropriately integrate SNSs research into their own studies in such a way that the negative outcomes were minimized.

The use of pre-post surveys experimental study was valuable in this case because it helped determine the impact of the treatment introduced into a class. A nonrandomized approach was used in which the intervention was introduced into a class after the class has already been assessed once to determine the effectiveness of their use of SNSs in a blended learning environment. The data were valuable because it provided insights into whether students can be taught to use SNSs effectively as part of their academic studies. Chapter 2 reviewed the literature on SNSs, online learning, and academic performance.

Chapter 2

Review of the Literature

Introduction

The current literature review was performed to help inform the current study regarding whether an intervention designed to help students manage their SNSs use while undergoing blended learning can potentially improve academic outcomes. Chapter 2 is divided into the following sections. First, a discussion of the literature criteria was provided. Second, a review of the theoretical foundation was provided. Third, a discussion regarding the key themes of the literature was provided. Fourth, a critique of the literature was delivered along with a discussion regarding the gap of knowledge for the study. Finally, a conclusion to the chapter including a summary of the discussions was given prior to the transition into chapter 3.

Literature Review Strategy and Criteria

Numerous search databases were reviewed in preparation for generating this literature review. The following databases were searched during this process: Elsevier, Google Scholar, LearnTechLib, SAGE Journals, ResearchGate, Taylor & Francis Online, & Wiley Online Library. In order to conduct the research, specific keywords were used to search the existing literature. These keywords included social media, social networks, social networking sites, social networking services, academic performance, academic performance factors, academic performance and social media, academic performance and social networks, academic performance and social networking services, online learning,

online learning outcomes, Facebook and academic outcomes, twitter and academic outcomes, and blended learning, blended learning outcomes.

The materials reviewed for the literature review included peer reviewed journal articles, dissertations, and government websites. In total, 100 documents were reviewed for inclusion in the literature review, and a total of 50 documents retained for inclusion. Literature retained for inclusion in the study discussed topics relevant to academic performance, the influence of SNSs on academic performance, and online learning and its outcomes.

Theoretical Framework

The theoretical framework underlying this research is Vygotsky's theory of learning. As a theory influencing the core of constructivist thought along with language and the thought of "collective subjectivity," Vygotsky's theory of learning dictates that learning occurs through language and communication functioning together to formulate creative knowledge processes in environments where students have an opportunity for co-authorship (Liu & Matthews, 2005). In the context of knowledge processes generated by the SNSs, co-authorship entails students being able to collaboratively engage in their own learning processes to become more proactive in knowledge acquisition, with improved memory resulting from the interactive and participatory nature of the SNSs platforms (Churcher et al., 2014).

A constructivist framework has been applied by a number of interventions in education. For instance, Chase and Abrahamson (2015) considered a constructivist learning environment where students were able to learn algebra by building a virtual model of a specific mathematics problem and were able to explore the underlying

technical principles through creative design. The overall results of the study were quite positive, with the data suggesting that students were able to better solve problems through creative design involving multiple steps rather rigorously approaching the details through the memorization of technical rigor (Chase & Abrahamson, 2015). Similarly, O'Malley (2015) found in a constructivist intervention of high school AP Biology students that blended learning environments were quite effective in terms of allowing students to learn from their actual experiences as opposed to traditional lectures. In any case, the constructive paradigm encourages students to work with each other and involve a collaborative approach to problem solving, allowing for more creative approaches to solving problems (Alt, 2018).

According to Lam (2015), the concept of collaboration is at the core of social constructivist theories. The theory of learning, and its associated framework of constructivism, have worked together to demonstrate that there can be many forms of learning in various fields of study. For instance, Nino and Evans (2015) noted that the positive benefits of video games in facilitating students' learning of engineering. In conjunction with the view of connectivism, which represents learning as the students' potential to construct and utilize knowledge networks for the purpose of gaining knowledge (Downes, 2010), the constructivist framework based on Vygotsky's theory of learning provides an appropriate theoretical understanding guiding this study.

Past Literature and Identification of Gaps

Social Networks

Social networking sites are defined as online communities that facilitate interactions between family, friends, coworkers, acquaintances, and people of similar

interests. Social networking sites are generally web based and feature many methods of communication (Boyd & Ellison, 2007). These forms of communication include instant messaging, chat messaging, video connections, file-sharing, blogging, and discussion groups. Millions of people visit social networking sites every day and use them to communicate with others.

Social Networks and Negative Academic Outcomes

Facebook

Facebook usage has previously been associated to a limited degree with negative academic outcomes. Researchers examined the relationship between class standing, Facebook use, and academic performance, and found differentiated outcomes based on class standing (Junco, 2015). The results of this study indicated that students at the senior level were less likely to spend significant amounts of time on Facebook versus lower student ranks. Increased Facebook usage was specifically associated with negative academic outcomes among only Freshmen students.

While increased time spent on Facebook had negative effects only among Freshmen, all class ranks lower than Seniors who multitasked with Facebook had poorer academic performance than if they had not multitasked (Junco, 2015). The findings suggested that Facebook usage had differentiated outcomes based on class rank. While the findings demonstrated some reason for concern regarding the use of social networks, this concern was different for different student ranks. Seniors were likely to be able to use Facebook at higher rates and multitask with it without negative effects. However, Freshman, Sophomores, and Juniors all were at risk of negative academic performance based on different patterns.

Facebook Usage

Rather than Facebook usage impacting GPA, researchers indicated that the reverse might be true. Michikyan, Subrahmanyam, and Dennis (2015) used a mixed-methods study with a multi-ethnic sample to investigate the relationship between Facebook use and academic performance among U.S. college students. Qualitative data were drawn using interviews and quantitative data gathered in the form of GPA and Facebook usage. Following analysis of the data, the researchers concluded that academic performance as more likely to impact the degree of Facebook usage, rather than the other way around. When Facebook was associated with academic outcomes, the researchers suggested that the types of activities that students participated in, rather than their raw usage time, were more likely to predict academic outcomes. One of the issues that the researchers noted was that individuals could report being online on a social network despite interacting with that network at only a minimal level. The findings, therefore, indicated that usage time might not be a good metric for gauging relationships between the use of Facebook and academic outcome.

Researchers reviewed the literature and found that there were some negative outcomes that could result from integrating Facebook into the academic process. Students often multitasked when using Facebook, which led to increased distraction and a lack of focus on the study topic (González, Gasco, & Llopis, 2016). As such, the use of Facebook could potentially take time away from focusing on academic tasks. This finding was consistent with the work of Junco (2015), who suggested that the use of Facebook led to multitasking among Freshman, Sophomore, and Junior students, which in turn led to poorer academic outcomes. The work of González et al. (2016) therefore

indicated that there might potentially be negative academic outcomes to integrating Facebook into academics if students went off task due to multitasking and a loss of focus.

General Services

A general examination of the association between problematic use of social networking sites and academic performance was performed. Cao, Masood, Luqman, and Ali (2018) noted that there were negative outcomes to the problematic use of various social networking sites. The researchers collected data from among 505 mobile users and analyzed those data and concluded that the misuse of mobile social networking sites created a cognitive and emotional preoccupation with the use of these services. As this preoccupation occurred, individuals' cognitive-behavioral control declined, leading to increased use of these services and an inability to overcome the negative outcomes of their use. In the end, the researchers concluded that problematic use of these services led to poorer academic outcomes.

Research into the negative outcomes of using social media was also studied to better understand social media overload and its impact on academic performance. Researchers noted that the use of social media was pervasive in the lives of university students and that excessive usage could lead to social media overload (Yu, Shi, & Cao, 2019). Investigations into its impact were conducted using a sample of 249 Chinese social media users, with researchers determining that there were different forms of overload manifested. The three major forms of overload, namely communication, social, and information overload, all increased techno stress, but it was information overload specifically that increased exhaustion among students. As such, there were potential negative outcomes should students become overloaded. While communication overload

and social overload associated with social network services did not increase exhaustion to a significant degree, the threat of information overload could potentially lead to exhaustion.

Both technostress and exhaustion were associated with poorer academic outcomes (Yu et al., 2019). The findings were consistent with the research of Cao et al. (2018), who, though they did not research overload specifically, did note that excessive use of social networking services was associated with poorer academic outcomes. As such, the research of Yu et al. (2019) was consistent with previous research indicating that the misuse of SNSs could lead to negative outcomes including decreased academic performance.

Social Networks and Positive Academic Outcomes

Facebook. Individuals indicate that the more they use Facebook, the better their academic performance. Ainin, Naqshbandi, Moghavvemi, and Jaafar (2015) examined Facebook usage, socialization, and academic performance to determine the relationship between the three. Researchers found that when individuals felt that social media use was socially acceptable, they were more likely to use Facebook at higher rates. This finding was in addition to the association found between increased Facebook usage and improved academic performance. This finding partly contradicted those of Junco (2015), whose study indicated that increased Facebook was associated with poorer academic outcomes among Freshmen. However, the contexts of these studies were also different. The research performed by Junco (2015) occurred among students in the U.S. In contrast, the research by Ainin et al. (2015) was conducted in Malaysia. As such, the contextual

factors differed between each study, and these differences in national contexts may have impacted the outcomes.

At least one other study indicated that time spent on Facebook had mixed effects with regard to academic performance. Marker, Gnambs, and Appel (2017) performed a meta-analytic study using 59 independent samples and a total number of participants of 29,337. The meta-analytic study indicated that for the total use of social networking services and for social networking services used during multitasking, there were only small negative effects. General uses of these networks had no impact on the time invested in studying for school. In contrast, when social networking sites were used for academic purpose, there was a small positive effect. The researchers concluded that when social networks were used for explicitly school related purposes, there was a positive impact on academic achievement, though this relationship's strength was small. However, there could also be small negative effects when social networks were used for non-academic purposes when studying should have been occurring, there were small negative outcomes. As such, the researchers concluded that students should restrict their social media use during studying periods to academic purposes only, even if the observed effects were small.

Research also indicated that Facebook could be used to promote interest in fields related to Information Communication Technology. Researchers examined Information Communication Technology access in relation to Facebook usage patterns (Robertson, 2016). Researchers used questionnaires to probe usage patterns and engagement levels with information communication technology. Researchers first noted that what people do when on Facebook could be quite diverse and include a number of different activities.

The second conclusion that researchers made was that generally promoting increased usage, no matter the activity, across a wide variety of platforms could increase interest in information communications technology. By promoting Facebook use across computers, laptops, tablets, and other devices, this increased engagement could be promoted, which may be useful for academic institutions trying to promote interest in information communication technology.

Increased engagement was also found in research by Park, Song, and Hong (2018), though their research was not specific to information communications technology but instead applied more generally to academic studies. Investigation of Facebook usage among students suggested that Facebook had the potential to improve student engagement. When students were less active Facebook users, researchers found there was a decreased degree of engagement. As such, even when there was not a specific focus on increasing student engagement with a subject, Facebook usage among peers helped to improve engagement with their academics.

Facebook is also useful when trying to promote language skills. Researchers noted that promoting English among English language learners was effective because Facebook provided a low-pressure environment in which individuals could practice their skills (Jassim & Dzakiria, 2019). Both written and oral skills could be promoted using Facebook, given the multiple communication tools available within the social network. It also allowed for increased practice time. In a formal learning setting, there is only a limited amount of time in which individuals can practice their English. However, Facebook allows them to practice for long hours whenever they want. In researching the integration of Facebook, the researchers noted the primary limitation of using Facebook

as a practice tool was not the network but those involved with learning. Teachers gave up control when Facebook was integrated, and students often exhibited a preference for learning in classes. Accordingly, effectively integrating Facebook would require acquainting students and teachers with the benefit of Facebook as a practice tool.

Effectively integrated, teachers could also use Facebook as means of directing instructions among their students (Asterhan & Roenberg, 2015). Researchers noted that teachers used Facebook to communicate with their students in a few major ways. These communication patterns included 1) instructional purposes of interaction, 2) psychological and pedagogical purposes of interaction, and 3) social interactive purposes of interaction. Research, therefore, indicated that if properly implemented, it was possible to use Facebook to deliver instruction. This might help to alleviate the concerns by teachers who wanted to retain tighter control over instruction, as indicated by Jassim and Dzakiria (2019).

A review of the literature indicated that Facebook could generally be used to have a positive impact on academic results. Facebook was pointed to as a tool with many potential uses (Gonzales et al., 2016). It facilitated collaboration between students, improved interaction and allowed for easier group work. Beyond the pure academic outcomes that resulted from integrating Facebook, researchers also indicated that integration of the service was also useful because it resulted in improved satisfaction levels among users. The use of Facebook also increased satisfaction with learning and improved engagement. Facebook allowed for work to be completed while allowing people to engage with one another, indicating that there were multiple positive benefits to integrating the service.

Twitter. The use of Twitter has previously been used as a community classroom engagement tool. Peters, Costello, and Crane (2018) noted that the use of social media to increase engagement was possible when certain best practices were used. Twitter events were used during the semester that required students to locate and tweet news stories that connected existing issues to course themes. Students were not asked to interact with one another, though they could. Students were graded according to whether they tweeted and whether the tweets effectively tied together real-world issues and classroom themes. Twitter was also used to collect data from the students in the form of a classroom survey. There were numerous positive outcomes determined by the study. Researchers noted that the use of Twitter as a classroom assignment was perceived as less work compared to alternative class assignments. The use of Twitter also did create a sense of community among students.

From an educator's perspective, there may be lessons to learn from research conducted into how physicians increased public knowledge through the use of Twitter. Choo et al. (2016) noted that physicians took advantage of Twitter to engage learners and share information more widely with the public, though there were both advantages and disadvantages to using Twitter to educate. Researchers noted that Twitter could help to educate a wide number of people quickly. Also, due to the nature of Twitter and the ability for users to respond to one another, the information could also be engaged with, debated, and discussed at greater length. This method of information dissemination was well suited for spreading information among a group to people who accepted information released by professionals using this approach. However, researchers also noted that new users were wary of engaging with the platform, which may indicate that Twitter may not

be suitable for releasing information to all audiences and specifically may not be effective at communicating with those uncomfortable with this medium.

Researchers have performed large scale reviews of Twitter's integration into education to determine whether it was an effective means of helping to educate individuals. Researchers examined 51 articles about Twitter and its use in education and found that Twitter was primarily used as an assessment tool and a means of communication between educators and students (Tang & Hew, 2016). Data produced in the literature indicated that Twitter was effective at improving communication between learners and teachers, but the researchers also noted that there was little indication that Twitter improved learning performance. What evidence was present in the literature was weak and indicated that future studies are needed closely to examine the relationship between the integration of Twitter and learning outcomes.

Twitter was effective as a "push" technology, characterized by its ability to help instructors disseminate vital information rapidly. This was consistent with the work by Choo et al. (2016), who also noted that Twitter could be used to quickly release information to a wide number of learners, although this information was material meant to be learned by the public. In the research by Tang and Hew (2016), vital information was not educational material, but rather course pertinent information including the test deadlines and requirements of homework. Taken together, the work by Choo et al. (2016) indicated that Twitter could be educational, though Tang and Hew (2016) suggested this may not be linked to learning outcomes. As such, it may be a supplementary educational tool that allowed for higher student engagement. However, Twitter could be effectively used as a push technology.

Further investigation was performed into the effectiveness of Twitter as a pedagogical tool, with a focus on examining its use in higher education. Bista (2016) examined the use of Twitter from the perspectives of graduate students using the service as a pedagogical tool, and all participants were using Twitter for the first time. These students reported that they felt the service was effective as a means of staying in contact with their instructors. It allowed them to receive course information, stay updated on course assignments, engage with their school mentors, and share helpful information with their fellow classmates. Consequently, the researchers found that, once again, Twitter was effectively used best as a push technology. This was aligned with the research by Tang and Hew (2016), who noted that Twitter was best for disseminating course information among students. The overall results, therefore, indicated that Twitter was best as a supplementary service rather than as an educational tool tied to improving academic outcomes.

General Services. Researchers suggested that social networking services could be useful in the construction of an online community. An investigation was performed into student teachers' perceptions regarding the usefulness of services such as WhatsApp, Telegram, generic email, and Google forms (Habibi et al., 2018). The research was conducted among those student teachers at a public university, with interviews forming the basis of qualitative data collection. A review of the interview data indicated that student teachers felt these services allowed for greater social interaction. This interaction included both peer discussions and discussions between students and instructors, which were facilitated using the online platform. A second advantage of the system was the impact on learning motivation and support. These platforms promoted were perceived to

increase engagement with the content, improve self-directed learning, and increase critical thinking. As such, there were numerous perceived benefits to the integration of these services in education.

Student Academic Performance

Extensive research has been conducted into academic outcomes and what may help to increase them and given the diversity of factors that may impact outcomes, the research into this area is incredibly diverse. Research indicated that maintaining school gardens improved academic outcomes among children (Berezowitz, Yoder, & Schoeller, 2015), while food insecurity was linked to declining academic outcomes (Shankar, Chung, & Frank, 2017), even when food insecurity was only at marginal levels. Attention deficit hyperactive disorder was also associated with poorer academic outcomes (Arnold, Hodgkins, Kahle, Madhoo, & Kewley, 2015), indicating that various types of psychological disorders may also impact academic performance.

Allowing more time for students to sleep through the use of later start times for schools was also associated with increased academic performance, indicating the importance of allowing students sufficient time to rest (Wheaton, Chapman, & Croft, 2017). Distinct types of marijuana usage patterns also affected academic performance differently, with early usage in college associated with lower academic outcomes (Suerken et al., 2016). Boredom was also found to have a negative influence on academic performance, while also impacting academic motivation and study strategies (Tze, Daniels, & Klassen, 2015). The diversity of research presented here suggested the many factors that might impact academic outcomes.

Online Learning Outcomes

Learning done over the Internet is not a new phenomenon and has been extensively studied in the literature. Researchers indicated that there are three major patterns of learning behavior among online learners (Fang et al., 2015). The first group of learners was characterized by those with elevated levels of persistence in their studies who rarely shifted between topics. The second group of learners was characterized by those with a low level of persistence in their studies who frequently shifted topics. Finally, the third group of learners was characterized by moderate levels of persistence who only shifted between the topics at a moderate rate. As such, different groups of students were likely to persist in their studies at different rates. Despite this, researchers did not observe differences in academic achievement between the groups, suggesting each type of learner settled into a form of study persistence that was best suited for them.

Learners may benefit from adopting various strategies that might positively impact academic outcomes in an online environment. A systematic review of the literature indicated that study outcomes were maximized when studies adopted time management strategies and knew how to best regulate their study efforts (Broadbent & Poon, 2015). Study outcomes were also positively impacted when students focused on improving their critical thinking skills and adopted metacognitive strategies. These formed complex study strategies that were distinct from more rote memorization attempts, such as rehearsal or elaboration. Study outcomes were also positively impacted through peer learning. Data indicating that regulation of study approaches were not entirely different from the research from Fang et al. (2015), who indicated that students self-sorted into different types of study patterns, though Fang et al.'s research focused on

how learners adopted different persistence approaches. Research by Broadbent and Poon (2015) similarly indicated that studies who self-regulated their approaches to their studies inherently adopted different approaches to their studies that best suited their own needs.

Researchers indicated that there were several predictors of e-learning success. Researchers noted that the factors positively influencing e-learning included instructor-student dialogue, student-student dialogue, the effectiveness of the instructor, and the overall course design (Eom & Ashill, 2016). The findings indicated that the inherent nature of digital learning itself wasn't as important to e-learning as was the contextual factors around that learning. Interactions were important, not only between students and instructors but also between students, suggesting the importance of peers to the learning process. However, the very design of these programs must be conducive to maximizing academic outcomes.

The importance of peers in the learning process was also noted in research conducted among online learners in symbiotic relationships (Bulut & Anaraki, 2019). Symbiotic learning was characterized by learning that occurred when individuals were involved in self-directed learning that included learning from other students. This approach to learning was linked with improvements to self-efficacy beliefs. This finding was important considering the association between self-efficacy and improved learning outcomes, though the findings of this study were restricted to finding improvements to self-efficacy.

The importance of peers was therefore indicated in the literature. Though the context of the research was different in the study conducted by Eom and Ashill (2016), the findings of their study generally indicated that engagement with peers helped improve

academic outcomes. This was consistent with the findings of Bulut and Anaraki (2019), though their research focused on a specific form of peer interaction that occurred with close peer education that occurred in symbiotic relationships.

The research did indicate that accessing online supplemental resources helped improve academic outcomes. An investigation into optional anatomy and physiology e-learning resources suggested that these resources were beneficial to improve student performance (Guy, Byrne, & Dobos, 2017). A review of the data indicated that supplemental resources were accessed by 50% of the cohort studied. Further investigation of the data indicated that deep learning occurred among those who accessed the clips and the interactive atlas of anatomy, indicating that the value of supplemental resources to improving learning outcomes. Those who accessed these various materials scored higher in their subjects than those who did not. The findings were complicated by the access rate of the materials, as the researchers could not untangle whether the improved academic outcomes were partly a result of more highly motivated learners who would have otherwise performed higher due to their higher degree of engagement.

The results of the investigation also indicated that increased online learning load may be associated with poorer learning outcomes. Research by Shea and Bidjerano (2018) indicated that among community college students, an online learning load of more than 40% of total courses came with a decline to the benefits usually attributed to online learning. While online learning was usually considered beneficial because it allowed these students to also self-pace their learning to a degree, excessive amounts of online learning contributed to declines in performance. As such, attempts to introduce learning

with online components should take into consideration the impact of excessive online learning load.

Research into online learning extended to mid-career adult learners enrolled in online doctoral programs. Researchers noted the importance of promoting self-efficacy beliefs among these students, since such beliefs were linked with positive academic outcomes (Williams, Wall, & Fish, 2019). The researchers indicated that to promote self-efficacy beliefs among this population, social support was important. When family, friends, and peers supported a learner, it led to improved self-efficacy beliefs among these students. Yet another crucial factor in self-efficacy beliefs was increased education levels among parents since a higher education level imparted increased self-efficacy belief to learners through mid-age. The findings were important given that, though parental education levels cannot be controlled, promoting increased social support may be an effective means of helping increase self-efficacy beliefs among online learners.

Blended Learning

Blended learning combines face-to-face learning with online activities (Bowyer & Chambers, 2017). These online activities can be used at any time and at any place that a student chooses. Blended learning is intentional, with instructors choosing to find effective ways of integrating their face-to-face instructional methods with online activities that help improve academic outcomes. Historically, blended learning has most often been used in higher education, though blended learning can occur in various contexts. Researchers have also suggested that there are multiple benefits to implementing a blended learning approach, such as increased student retention and

increased pass rates. As such, the data indicated that blended learning was effective in improving student outcomes.

Blended learning has previously been associated with multiple positive outcomes. Researchers examined the implementation of blended learning in science education (Stockwell, Stockwell, Cennamo, & Jiang, 2015). By integrating blended learning approaches and placing a heavier emphasis on in-class problem solving, researchers were able to improve academic outcomes as measured by exam performance. Video assignments, delivered using online methods, helped to improve attendance and student satisfaction. As such, blended learning was associated with improved outcomes for students. Blended learning was also found effective when applied to those studying to enter the health profession. Researchers noted that blended learning had a consistent positive effect on student outcomes and was at least as effective as nonblended instruction (Liu et al., 2016). The use of blended learning was therefore effective at helping pass on knowledge about the health profession. The research, therefore, indicated that not only was blended learning effective at improving retention (Stockwell et al., 2015), but that it also helped to improve academic outcomes (Liu et al., 2016).

One of the issues with blended learning is that students often do not self-regulate their studies well. Researchers examined the self-regulated learning strategies of students and found that blended learning students did not self-regulate as well as online students (Broadbent, 2017). Researchers indicated that online learners were better self-regulated in multiple ways, though in two areas, peer learning and help seeking, online learners did not perform as well as blended learners. Most of the findings still indicated that blended learners lagged behind online learners in terms of self-regulating their studies.

Satisfaction with blended learning relied on several critical factors. Chen and Yao (2016) indicated that well developed blended learning included several important dimensions. These courses had to be designed such that students felt it was easy to engage with the lessons online without too much struggle. Therefore, ease of use was particularly important in maintaining student satisfaction. The researchers also indicated that when there was perceived ease of use regarding to the technology, students were able to devote more of their attention to learning. This improved ability to focus more intently on learning may help to improve academic outcomes among students. The design of a course was particularly important among younger students, indicating a generation-based gap with regard to satisfaction with a course.

Separate research also indicated that online interactions needed to be engaging and stimulating (Boelens, Wever, & Voet, 2017). This finding, therefore, indicated the need for carefully considering the types of activities implemented into classes. These courses needed to foster a learning environment and include the flexibility necessary for students to engage with the material anytime or anyplace they desired. Learning was also partly facilitated through social interactions, which could be achieved with face to face meetings conducted between instructors and students.

The likeliness of student success was also studied as researchers attempted to identify both external factors and student characteristics that were linked to success in blended environments. Kintu, Zhu, and Kagambe (2017) noted that regarding external factors, a course's design was important for student satisfaction. The quality of the technology and online tools made available to students helped predict satisfaction in these courses. As such, the research suggested the importance of pairing courses with

appropriate technology. However, students also required face to face support to succeed, indicating the ongoing need for human contact during the course of instruction with regard to student characteristics, the attitudes that students held toward the course influenced their satisfaction. The ability to self-regulate during learning was also important to satisfaction. The research, therefore, indicated that it was important to effectively develop a course but also promote students' self-regulation and attitudes. However, designing a course was more difficult than initially thought (Maarop & Embi, 2016).

Researchers noted that one of the greatest obstacles to effectively designed courses is the existing workload upon teachers, which limits the time instructors can commit to creating a high-quality blended course. As such, researchers indicated that teachers needed to be given the additional time and support for creating these courses. Teachers also needed to appropriate pedagogical tools to develop a proper course, suggesting a role for professional development designed to improve teacher's abilities to create a blended environment.

Certain variables were associated with success in blended environments, suggesting that certain behaviors should be promoted if instructors wanted to maximize the chance for success among students. Researchers specifically identified four specific behaviors that predicted the majority of variance in final student grades (Zacharis, 2015). When students engaged with the course and both and posted messages, they were more likely to have improved grades. Engagement in the form of content creation was also linked with academic success. Putting forward effort on course quizzes was associated with improved performance as was the number of files viewed. Consequently, different

measures of student engagement were associated with improved performance in blended courses.

Gaps, Analysis, and Critique

The literature regarding online learning was diverse. However, most of the literature was characterized by quantitative based research that compared grade outcomes against various measurements of SNSs usage. The research focused on the intensity of usage relied upon individuals self-reporting their SNSs usage in terms of time, which risked erroneous gauges of SNSs usage because people needed to report their own behaviors. However, short of installing programs on peoples' mobile devices and computers, there were few other ways of gauging the intensity of usage of SNSs. Quantitative assessments of participants went beyond the examination of SNSs intensity and grade outcomes but also included assessments of attitudes.

These studies employed quantitative surveys to assess attitudes. Consequently, even assessments of individual attitudes relied upon quantitative assessments. Statistical analysis used to determine the strengths of relationships helped researchers assess attitudes in a quantitative way that avoided the use of qualitative investigation, which would be open to value-based interpretation. As such, the body of existing literature was fairly rigorous and rooted in quantitative research meant to establish strong correlations between SNSs use and academic outcomes.

Significantly, there was no literature identified in the research that emphasized a pre-survey and post-survey research design in which an intervention treatment was used to improve SNSs use in studies within a blended learning context. This gap in the literature could be filled within the context of the proposed study. In doing so, it may be

possible to add to the existing literature research data suggesting that such interventions may help improve student performance when using SNSs within their studies.

Synthesis and Summary

The literature on social networks and online learning is diverse. Generally, online learning has proven to be an effective means of educating students, though several factors predicted success. Learning strategies were linked to improved learning, indicating the importance for students enrolled in online courses to have appropriate learning strategies (Broadbent & Poon, 2015). Also, of importance was the role of support from peers (Eom & Ashill, 2016) and family (Williams et al., 2019). Outside of online learning in the traditional e-learning environment, social networks have also been used to positively impact learning. Facebook has been pointed to as a specific means of increasing notifications to students (Bista, 2016; Tang & Hew, 2016).

Therefore, Facebook could function as a means of keeping students up to date with class notifications. However, social networks also generally served to promote interaction between students, which could also help to increase motivation and engagement (Gonzales et al., 2016). As such, there were numerous positive benefits noted for integrating social networks into the academic process. Though there was the potential for inappropriate service use (Cao et al., 2018) and multitasking distractions (Gonazles et al., 2016) to negatively impact academic outcomes, students who generally knew how to remain on task and limit their usage of social networks could benefit positively from their use.

Chapter 3

Methodology

Overview

The purpose of this mixed method study was to determine if the implementation of an instructional training course (Appendix A) on how to effectively use SNSs as an educational tool increases students' academic performance in a blended learning environment. Chapter 3 was organized according to the following outline: First, the research question guiding the study was provided. Second, the research design was discussed. Next, the target population and sample were identified. Then, the procedures, instrument, and ethical considerations were discussed. Along with a brief discussion of how data were collected. Finally, a summary of the chapter was presented.

Research Question

A single research question and hypothesis guide the study. They are as follows:

RQ1: Will the implementation of an instructional training course in effective SNSs use as an educational tool affect Saudi Arabian students' academic performance in a blended learning environment?

RQ2: What are the leaners' perceptions regarding the effectiveness of SNSs as an educational tool?

Hypothesis: The implementation of an instructional training course in effective SNSs use as an educational tool will have a statistically significant effect on Saudi Arabian

students' academic performance (as measured by students' grades) in a blended learning environment.

Research Design

The study relied on a pre-survey and post-survey and students' grade of their 1st and 2nd midterm exams in the designed training course. The training course was intended to gauge the performance of students in a blended learning environment both before and after the introduction of a treatment. Once the pre-survey (Appendix B) was distributed to students as well as they finish their 1st midterm exam, the designed training course involved requiring students to complete tasks, activities, and assignments that require using SNSs for completion. A class intervention was introduced to the experimental group meant to improve how students integrate SNSs use as educational tools during their studies. The intervention was designed to help students better understand how to manage their SNSs use effectively while minimizing its negative impact on studies. However, the completion of the treatment was necessary to those students who decide to leave the intervention or those who might not have an access to the Internet during the intervention time frame which was 6 weeks that started in the first week after the 1st midterm exam till the 2nd midterm exam. Rather, students who completed the intervention were documented. Figure 2 illustrates, in general, the implementation of the training course:

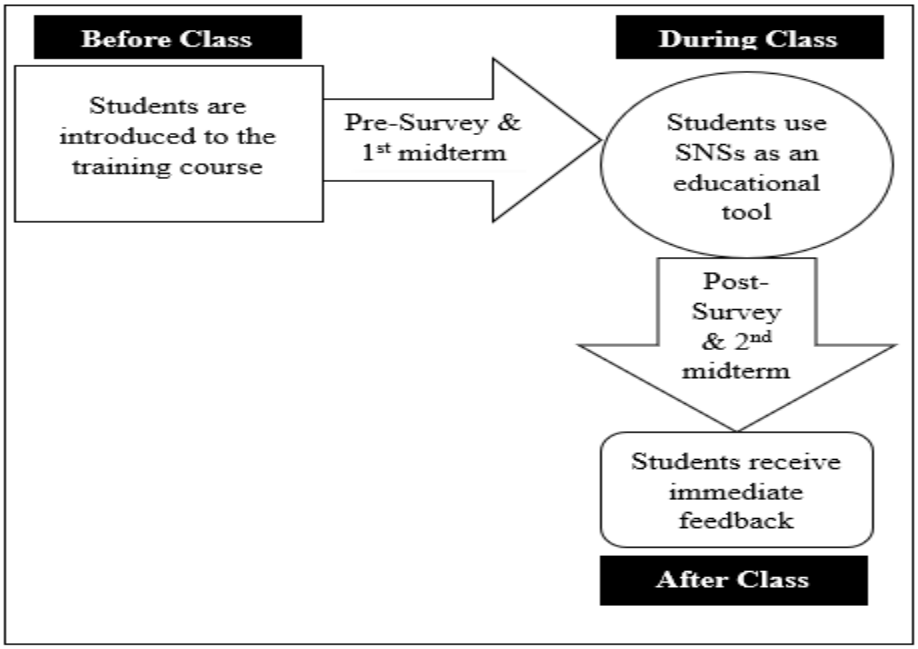

Figure 2. Training Course Diagram

The research design included a nonrandomized control group consisting of students who did not receive SNSs training. The purpose of using a nonrandomized control group was due to practical limitations placed on the researcher. The assembly of a class of students needed to occur, which was beyond the ability of the researcher. As such, the intervention was introduced to an existing class environment. However, from the beginning of the course, students were informed that they were participating as part of an experimental intervention and a consent statement was distributed to them prior to the distribution of the pre-survey.

Students were alerted that their midterms grades would be collected as part of the experimental intervention. They had the training course content and schedule. An introduction of the training course and how they will be using SNSs as an educational tool in their learning. Below is the training course content and schedule:

Table 1

Training Course Content and Schedule Were for Winter 2020 at TU:

1st Week (Starts after the 1st midterm exam): Pre-survey, Introduction of how to use SNSs as an educational tool, and user tutorial of using SNSs were presented.
2nd Week: The experimental group used WhatsApp, and Twitter and they were assigned some homework on SNSs. Explained the features of each SNSs and how they should be used in the learning environment.
3rd Week: Reviewed the experimental group's homework. Guided students in the use of each SNSs and observed their activities on SNSs to make sure they were following the training course content.
4th Week: Met students in the experimental group online and in the assigned SNSs. The researcher made sure that each student had used the assigned SNSs as educational tools during their learning process by discussing with them how had they done their assignments through SNSs and gave them some tips about any problems or concerns that he observed during the first 4 weeks. This helped them to be in the right track and followed the training course as instructed.
5th Week Course lessons and answered students' questions regarding the training course or the class using the assigned SNSs. Also, they did perform an online practice of using the assigned SNSs. In the end of the week, a pop quiz of SNSs use in learning was distributed among students. Reviewed the training course contents and answered students' final questions about the training course.
6th Week The post-survey was distributed. Also, midterm exam and collected data were compared to see if the training course goals and objectives are met during these 8 weeks.

Procedures

The procedure included the use of a training course that was meant to improve the outcomes of students using SNSs within a blended class environment. The students were enrolled in MIS course at the MIS department in TU. The course had two sections due to the higher number of Saudi students who registered in the course and these sections were taught by the same instructor. The course was in students' schedule for Winter 2020 and the term starts in 1/19/2020 in TU but the implementation of the training course was introduced to students after their 1st midterm exam on March 16, 2020 till the end of

April (6 weeks). The study examined whether instruction focused on how students could use SNSs to support their learning improves their performance (as measured by their grades in the course). The training course was 40% self-directed for students in terms of exploring features of the assigned SNSs in the course and 60% facilitator-led in terms of answering students' questions about SNSs use as educational tools and guiding them on the right outlined steps of the designed course for effective use of SNSs. For the purpose of this study, the independent variable was training course implementation, in which participation within the training course was anticipated to have an impact on academic outcomes. Participation in the course was operationalized as a nominal dichotomous variable in which 0 indicated that the student did not participate in the training course while a score of 1 indicated that the student did participate in the training course (Lewis-Beck, Bryman, & Liao, 2004). Students were divided into two classrooms using a randomized procedure where students chose group "0" or group "1" which dictated whether or not they received the training course. Covariates were controlled as well as the student's current grade point average.

The researcher had access to a MIS class because he is a lecturer at the MIS department in TU in which the intervention treatment can be introduced. Academic performance data did not require a specific instrument and was instead collected through the normal grading process of the 1st midterm exam. Grades of the 1st midterm were collected, prior to students' participation in the training course, and it constituted the baseline academic data against their grades from the 2nd midterm exam, after their participation in the training course. These collected data from the two midterm exams was compared. Course grades were compared from the start of the training course to the

end of the 2nd midterm, constituting both pre-survey and post-survey data. For example, in the beginning of the semester, grades from the 1st midterm exam were collected. Their grades from the first midterm exam were compared to their grades from the second midterm exam. Also, data of the pre-survey and the post-survey were collected to see if there was a change in students' perceptions toward SNSs use during the intervention. The detailed comparison showed how much there was an enhancement during the course among students and if the training course had positively affected students' academic performance.

Recently, some institutions have adopted SNSs use among their staff, faculty, and students because most students are digital native now. Therefore, the perception of SNSs usage may be received positively by students. However, some students do not like the idea of mixing SNSs use into their learning environment. The researcher examined students' perceptions about SNSs use as an educational tool in their learning after the completion of the intervention.

As a training course that required students to use SNSs, students needed to be able to access the Internet at home, away from the university. The training was self-directed and completed entirely using the assigned SNSs in forms of assignments.

Instrument Development

The instrument involved in this specific case was a pre-survey, post-survey, and students' grades of the 1st and 2nd midterms after the intervention of the training course was delivered to students. The intervention was meant to instruct students how to use SNSs effectively in order to maximize their outcomes in a blended classroom environment. An instructional training course was developed for the purpose of

investigating the effect in the population. This course features a constructivist-based module intended to improve SNSs use. Students who participated in the experimental group used either or both of two key processes of constructivism theory. These keys are assimilation and accommodation. Using assimilation, students were able to incorporate new experience regarding SNSs into their existing knowledge framework of SNSs without changing that framework (Piaget, 2013). Using accommodation, students incorporated their new experience with SNSs by changing their prior perception or representation of SNSs. For example, students accommodated their ability to use SNSs during the learning process and knew how and when to use SNSs as educational tools. There was no instrument used to specifically gauge students' academic performance since the method for collecting students' performance data were in the form of grades.

Reliability of the survey instrument was determined by estimating Pearson's correlation coefficient for the scores on the pre and post surveys (Heale & Twycross, 2015).

The constructivism-based training module targeted several behaviors that may impact academic performance. Time management when integrating SNSs into their work and multitasking behaviors, for instance, formed two behaviors that were addressed during the training course. Students were also able to refresh their understanding of how to manage SNSs appropriately by meeting with faculty, who reviewed ways that students can most effectively manage their SNSs usage. In this way, the module may not only have a one-time impact but potentially continue having an ongoing impact via meetings with faculty. Development of the module required a review of the literature and consulting with experts within this field to identify several behaviors linked with poor

SNSs usage outcomes as well as SNSs usage successes. The module was developed around these factors, encouraging specific behaviors associated with improved academic performance.

Target Population and Sample

The target population in this specific study was undergraduate students in Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia. As such, the sample drawn for this study was taken from among an existing MIS class of TU students. Given that this was a pilot investigation of this treatment, the study used only a single class, which has two sections with the same instructor, to determine the impact of the intervention. Because the class was chosen independent of any influence of the researcher, the current study did not control the selection of the sample. This was consistent with the nonrandomized control group pre and post approach, which does not involve selecting participants for the sample (Harris et al., 2006).

Because the researcher was unable to control the sample selection, it was impossible to create a demographically representative sample that adequately represents the larger student population. Further, because only one class was used to assess the effectiveness of the treatment, the size of the sample did not necessarily be adequately sized to generalize the findings across the larger student population.

The target population in this specific study was undergraduate students in Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia. As such, the sample drawn for this study was taken from an existing MIS class of TU students. Given that this was a pilot investigation of this treatment, the study used only a single class, which had two sections with the same instructor, to determine the

impact of the intervention. The sample consisted of a total of N = 69 students in which 31 were randomly assigned to the control group (no intervention) and 38 assigned to the experimental group.

The study used a pre-survey and post-survey and students' grade of their 1st and 2nd midterm exams in the designed training course. The training course intended to gauge the performance of students in a blended learning environment both before and after the introduction of a treatment. Once the pre-survey was distributed to students as well as they finish their 1st midterm exam, the designed training course involved students to complete tasks, activities, and assignments that required using SNSs for completion. A class intervention was then introduced to the experimental group meant to improve how students integrated SNSs use as educational tools during their studies. Groups were then compared in order to measure the effectiveness of the implementation.

Ethical Considerations

The anonymity of the students participating in the study was ensured because individual student data were not reported. Rather, the average of the class performance was taken to determine whether the intervention improved performance as an average across the class. Students still needed to be informed regarding the intervention at the end of their coursework.

Following the conclusion of the program, students were informed that the course was part of a large investigation into whether the use of a specific intervention may help to improve SNSs use and improve academic performance, within the context of a blended study. A full presentation of the rights of the students was provided through email. This presentation included a discussion of the students' right to remove their data from the

study entirely (Grady, 2015). Students who were in the control group were also provided the opportunity to receive the training after the study was complete, in order to not deprive them of the opportunity to reap the potential benefits of the training.

Other points were also discussed in the presentation. The participants were informed regarding the full purpose of the study and how the data would be used. Students were assured that their data are kept entirely anonymous. The anonymization of data included security procedures intended to ensure that anyone who was not authorized to see the data would not see it. To that end, the data remained digital. Student performance data were stored online in a password protected cloud server that was accessible only by the researcher.

The study needed to fulfill certain requirements prior of the implementation of the designed training course. These requirements were the approval from the institutional Review Board (IRB) (Appendix D), Informed Consent Statement (Appendix E), and a permission letter from the MIS department at TU for conducting the study (Appendix F). The researcher met these requirements and the supporting documents can be found in the appendices.

Data Analysis

After the designed training course had been completed through the end of the semester, the findings from all testing were compared against each other and analyzed. Comparing the performance results helped the researcher to better understand whether the intervention was effective at improving the performance of students on assessments in a blended learning course as well as assisting ability to use SNSs as educational tools to support their learning. Completion of this testing data was analyzed using repeated

measures ANCOVA (RM ANCOVA). The use of RM ANCOVA was appropriate when testing for statistically mean differences in repeated measures when the researcher was also trying to control the covariate of the 1st midterm exam to the 2nd one, and the pre-existing differences in students' academic performance (i.e. grade point average). For the inferences, the researcher reported point estimates, test statistics based on the F-test, and the *p*-value for each variable in the model.

Also, surveys data were analyzed to see if students' perceptions had changed before and after the intervention. Data from the pre-survey was compared to the data from the post-survey to see what the changes in students' perceptions of SNSs use in their learning were.

Summary

The purpose of this mixed method study was to determine if the implementation of an instructional training course was effective in improving students' academic performance and the learners' perceptions regarding the effectiveness of SNSs use as an educational tool. The study focused on the extent to which the training course improves students' academic performance, in addition to the academic variable grade point average using the covariate between the two midterms exams. Students, in the experimental section, were first asked to answer the pre-survey prior to their 1st midterm exam as well as an introduction of the training course. Then, they were assessed in the class to gauge their ability to effectively integrate SNSs during their MIS course as part of their blended learning process. Students in that section were then be provided with an instructional course meant to improve their use of SNSs. Students took assessments that focus on their ability to apply SNSs to support their learning during their participation in the training

course. By the end of the 6th week, students had to take their 2nd midterm exam and answer the post-survey. However, the chosen MIS course had two sections and the first section (experimental group) had 42 students and the second section (control group) had 32 students. One of the sections was the experimental group and the other one is the control group. The data collection process occurred in the middle of the winter term of 2020 in TU (right after the 1st midterm exam), with RM ANCOVA used to assess performance.

The analysis was conducted among students who completed the intervention and those who did not, provide insights into whether the changes in performance are related to the introduction of the intervention. Students were then informed at the end of the year regarding the use of the data within a study and provided with the opportunity to have their information withdrawn from the study. These students were also informed that their data would be kept entirely anonymous, assured that data would be accessible only by the researcher, and assured that the data would be properly stored in an online cloud server. The RM ANCOVA approach was utilized to produce and report the inferences gained from the study.

Chapter 4

Results

Introduction

The purpose of this mixed method study, which has a pre-survey and post-survey, was to determine if the implementation of an instructional training course on the effective use of SNSs as an educational tool might lead to improvements in academic performance. This study examined the effect of the instructional training course on the effective use of SNSs and the academic performance of 69 students in the Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia. These students were currently enrolled in MIS classes for the Winter 2020 semester, in which there may have been a benefit of implementing SNSs as an educational tool. This chapter discusses data analysis, which is broken into two sections quantitative analysis (descriptive analysis, pre-analysis data screening, and analysis of covariance), and qualitative analysis (two themes are discussed). Analysis of covariance (ANCOVA) was conducted in order to answer and test the following research question and corresponding hypothesis:

RQ1: Will the implementation of an instructional training course in effective SNSs use as an educational tool affect Saudi Arabian students' academic performance in blended learning environment?

RQ2: What are the leaners' perceptions regarding the effectiveness of SNSs use as an educational tool?

Hypothesis: The implementation of an instructional training course in effective SNSs use as an educational tool will have a statistically significant effect on Saudi Arabian students' academic performance (as measured by students' grades) in a blended learning environment.

What follows now are screen shots of students' participation in SNSs. The last section of the chapter is a summary of the results.

Screen Shots of Students' Participation in SNSs

Figures 3 through 13 below depict the survey question regarding the perception of using Twitter, Blackboard for TU, intervention classes, Twitter participation, WhatsApp participation, shared documents and links, and media, as well as the pre-survey.

Figure 3. Survey Question Was Posted on Twitter About Students' Perceptions.

Figure 3 shows a question that was posted on Twitter in the 3rd week of the intervention to see students' perceptions about using Twitter as an educational tool. The question was "Honestly, my participation in this developed training course (SNSs use as educational tool) was:

a) Excellent and positive
b) Very good
c) Somewhat good
d) Not good and it's not beneficial".

More than 50% of the participants chose response a. They loved the training course and it had a positive impact on their learning skills. About 33% chose response b, saying that it was a good experience to use SNSs during their learning process, and about 13% chose response c, stating that it was somewhat a good experience.

Figure 4. Intervention Classes.

Figure 4 shows that the instructor was teaching around 14 MIS courses during the Winter Semester of 2020 at TU. This shows the large number of Saudi students in the MIS department as well as the high teaching load on the instructor. Therefore,

implementing the use of SNSs as an educational tool could help instructors at TU, as well as other higher learning institutions in Saudi Arabia, providing a strong educational tool that increases students' academic performance and monitors students' participations during the learning process when implemented in the course curriculum. Also, using SNSs as an educational tool will help students enhance their academic performance, especially when working in groups.

Anonymity is one of the confidential requirements in a research. Therefore, to adhere to this, the researcher kept participants' identity secrete. No respondent was forced to reveal information to the researcher which they did not wish to reveal.

Figure 5. Twitter Participation 1

Figure 6. Twitter Participation 2

Figure 7. Twitter Participation 3

Figures 5,6, and 7 show that students actively followed #Learning_by_the_use_of_SNSs on Twitter. Also, these figures show the variety of student posts. Some of the posts were text, links, and photos. Diversity in the type of shared knowledge could help students better understand the course content and enhance their insights about certain topics.

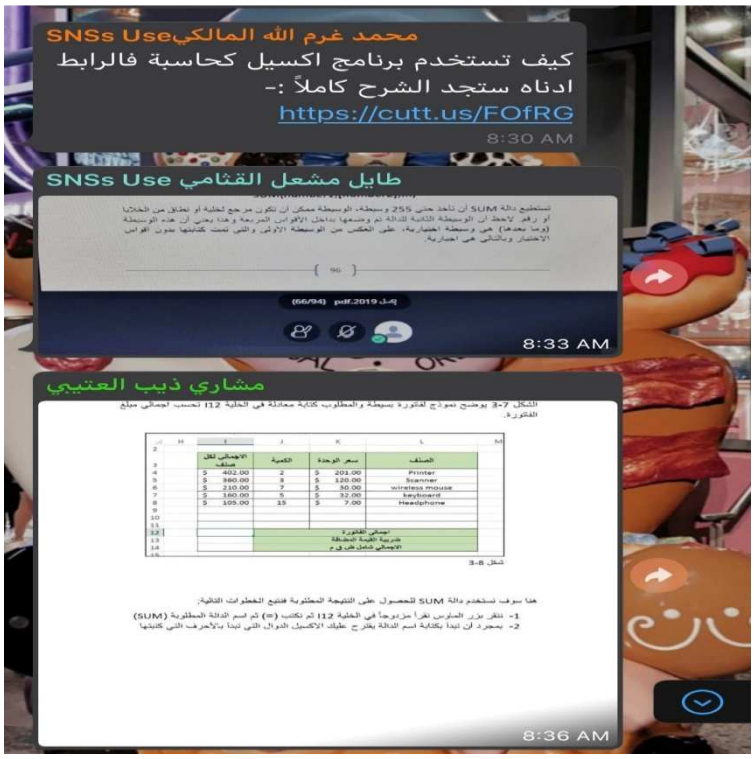

Figure 8. WhatsApp Participation 1

Figure 8 shows different types of posts that were posted by students using the WhatsApp group as an educational tool.

Figure 9. WhatsApp Participation 2

The researcher noticed that students were active in the WhatsApp group more than they were on Twitter. Figure 9 shows some students replied to others who had posted some information about a specific topic in their course. This means that students' participation in the training course was positively increasing. Also, the instructor noticed the formal way that students used to respond to each other about some posts. This helped students practice formal writing in an informal setting because they liked using SNSs to learn.

Figure 10. WhatsApp Participation.

Figure 10 shows that students had shared different posts by the end of the first day of the intervention. Thirty minutes later, a student asked the instructor for the name of the training course account on Twitter. He followed the account on Twitter and completed the pre-survey. This encouraged some other students to follow the training course account on Twitter and responded to the pre-survey. SNSs use as an educational tool helped the instructor manage and track students' participation during the intervention.

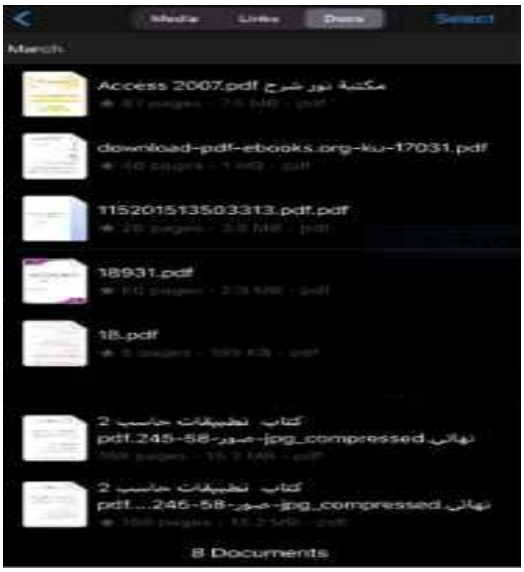

Figure 11. Shared Documents

Figure 12. Shared Links

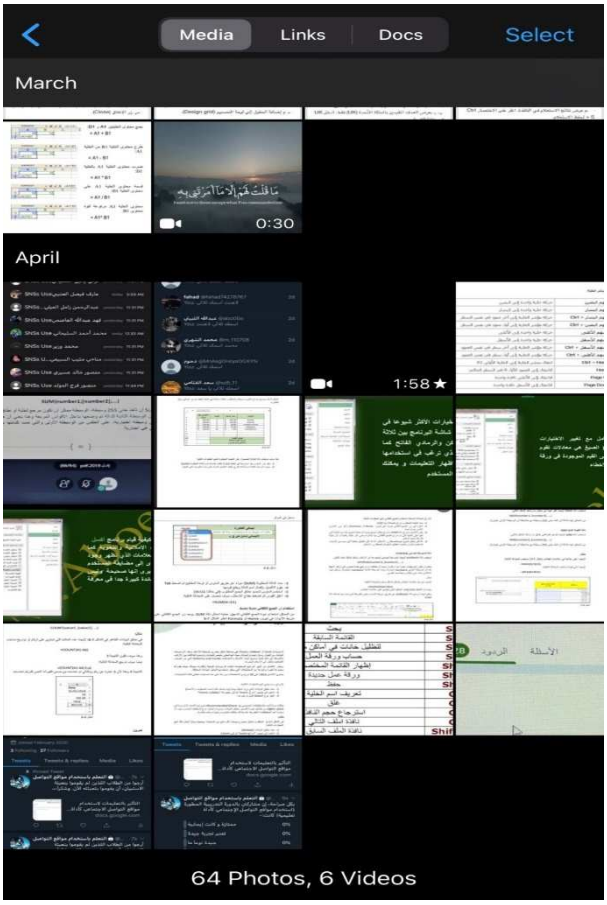

Figure 13. Shared Media

Figure 11, 12, and 13 show the number of shared files during the intervention. Figure 11 shows the number of shared documents, which in this case were different e-books for the same course. Instantly, the students had 8 additional references to use during the course, each containing unique and valuable information about course topics. Figure 12 shows the high number of shared links among students. This provided them with materials to learn from and ways to explore new information about the course during the six-week intervention period. The average number of shared links is 28 links per week during a period of 5 weeks in addition to the 8 e-books that were shared among students. Also, figure 13 shows the number of shared photos and videos on the WhatsApp group in addition to the previously shared files that were related to the course. It was

beneficial for students to have different types of learning resources. Each student could then choose the perfect source suited his preferred way of learning in addition to using the instructor-chosen course content.

Pre-analysis Data Screening

The assumptions of normality, outlier detection, and homogeneity of variances were all tested. Based on skewness and kurtosis values, there were no violations of the normality assumption, as all values fell within -3 to +3 as indicated in table 2 below.

Table 2

Skewness and Kurtosis Descriptive Statistics

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Midterm1	-.228	0.289	2.900	0.570
Midterm2	-1.505	0.289	2.107	0.570

Outliers were assessed by examination of standardized values for each of the midterm scores. There were two values that were beyond -3 / +3 standard deviations as shown in table 3: -3.07 and -5.43. These two values were kept in the analysis in order to not decrease statistical power, as there were no violations of the normality assumption.

Table 3

Min/Max Values

	N	Min	Max
Midterm1	69	-3.07	2.53
Midterm2	69	-5.43	1.50

Regarding the homogeneity (equality) of variances, ANCOVA assumes that there are equal variances between the categories of the between-subjects factor. Table 4 provides these results. There was a violation of this assumption for midterm 2 ($p <$

0.001). However, for balanced designs, ANCOVA is robust through all sample-size designs and distributional configurations (Rheinheimer & Penfield, 2010). Thus, the violation was not considered as an issue.

Table 4
Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
Midterm2	42.978	1	67	<0 .001

Findings

Descriptive Statistics. Midterm exam scores were calculated by utilizing SPSS version 23 for both the control and experimental groups. In the control group, midterm 1 grades ranged from 0 to 10.00 (M = 5.09, SD = 1.94) and midterm 2 grades ranged from 0 to 10.00 (M = 6.35, SD = 2.43). Regarding the experimental group, midterm 1 grades ranged from 2.00 to 8.00 (M = 5.39, SD = 1.10) and midterm 2 grades ranged from 7.00 to 10.00 (M = 9.86, SD = 0.52). Table 5 depicts this information.

Table 5

Descriptive Statistics

		N	*M*	*SD*
Midterm1	Control	31	5.10	1.94
	Experimental	38	5.39	1.10
	Total	69	5.26	1.53
Midterm2	Control	31	6.35	2.43
	Experimental	38	9.87	0.53
	Total	69	8.29	2.42

Quantitative Analysis. The following research question and hypothesis were tested using ANCOVA:

RQ1: Will the implementation of an instructional training course in effective SNSs use as an educational tool affect Saudi Arabian students' academic performance in a blended learning environment?

RQ2: What are the leaners' perceptions regarding the effectiveness of SNSs use as an educational tool?

Hypothesis: The implementation of an instructional training course in effective SNSs use as an educational tool will have a statistically significant effect on Saudi Arabian students' academic performance (as measured by students' grades) in a blended learning environment.

The dependent variable midterm score 2, the independent variable group type, and the covariate midterm 1 score were entered into the ANCOVA procedure in SPSS. The between subject factor of "GROUP" was entered which signified 0 for control group and 1 for experimental group.

After adjustment for midterm 1 scores, there was a statistically significant difference (effect size of 0.532) in midterm 2 scores between the interventions, F (2, 66) = 37.515, $p < 0.001$, partial $\eta^2 = 0.532$. Post hoc analysis was performed with a Bonferroni adjustment. Post-intervention midterm 2 scores were statistically significantly greater in the experimental group vs. the control group (mean difference of 3.538 (95% CI, 2.722 to 4.354) $p < 0.001$) and the high-intensity exercise intervention (mean difference of 0.584 (95% CI, 0.482 to 0.686) $p < 0.001$). Tables 5 above and 6 below depict this information.

Table 6

Pairwise Comparisons

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Control	Experimental	-3.538*	0.409	< 0.001	-4.354	-2.722
Experimental	Control	3.538*	0.409	< 0.001	2.722	4.354
Based on estimated marginal means						

*. The mean difference is significant at the 0.05 level.
**. Adjustment for multiple comparisons: Bonferroni.

Supplementary analysis was conducted in order to test differences in midterm scores within and between groups. Within the control group, there were significant mean differences from midterm 1 to midterm 2 scores, F (1, 30) = 4.749, p = 0.037, η2 = 0.137. This mean difference was significant with midterm 2 grades greater than midterm 1 (M_{diff} = 1.26, SE = 0.037). Tables 7 and 8 depict this information.

Within the experimental group, there were significant mean differences from midterm 1 to midterm 2 scores, F (1, 37) = 457.748, p < 0.001, η2 = 0.926. This mean difference was significant with midterm 2 grades (M = 9.96, SD = 1.10) greater than midterm 1 (M = 5.39, SD = 0.52), which is a significant difference (M_{diff}= 4.48, SE = 0.037). The magnitude of the effect size was much greater in the experimental group as noted by its larger η^2 = 0.926. Tables 9 and 5 provide this information.

Table 7

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	24.532	1	24.532	4.749	.037	0.137
Error (Time)	Sphericity Assumed	154.968	30	5.166			

*. Computed using alpha = .05

Table 8

Pairwise Comparisons

(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Mid 1	Mid 2	-1.258*	0.577	0.037	-2.437	-0.079
Mid 2	Mid 1	1.258*	0.577	0.037	0.079	2.437

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

**. Adjustment for multiple comparisons: Bonferroni.

Table 9

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	380.263	1	380.263	457.748	.000	0.925
Error (Time)	Sphericity Assumed	30.737	37	0.831			

Regarding differences between groups, there were no significant differences of midterm 1 scores between the control (M = 5.10, SD = 1.94) and experimental (M = 5.39, SD = 1.10) groups, $F(1.67) = 0.644$, $p = 0.425$. However there were significant

differences in midterm 2 scores between the control ($M = 6.35$, $SD = 2.43$) and experimental ($M = 9.87$, SD = 0.53) groups, $F(1.67) = 75.338$, $p < 0.001$. Tables 10 and 11 provide this information below.

Table 10

ANCOVA Analysis

		Sum of Squares	df	Mean Square	F	Sig.
Midterm1	Between Groups	1.516	1	1.516	0.644	0.425
	Within Groups	157.789	67	2.355		
	Total	159.304	68			
Midterm2	Between Groups	210.764	1	210.764	75.338	< .001
	Within Groups	187.439	67	2.798		
	Total	398.203	68			

Differences within each group were investigated. In the control group, there was an increase in scores between midterm 1 and midterm 2 by 1.26. In the experimental group, there was an increase in scores by 4.47. Differences between groups were also compared. Midterm 1 scores were greater in the experimental group by 0.30. Midterm 2 scores were also greater in the experimental group by 3.51 and table 11 provides this information below. In order to assess the statistical significance of these differences, analysis of covariance (ANCOVA) was conducted.

Table 11

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	*p*	Partial Eta Squared
Corrected Model	211.850[a]	2	105.925	37.515	0.000	0.532
Intercept	386.416	1	386.416	136.856	0.000	0.675
Midterm1	1.086	1	1.086	0.385	0.537	.006
Group	211.707	1	211.707	74.979	< .001	.532
Error	186.353	66	2.824			
Total	5140.000	69				
Corrected Total	398.203	68				

*. R Squared = 0.532 (Adjusted R Squared = 0.518)

Qualitative Analysis. The following question was a qualitative question in the post-survey and its purpose was to find out students' perceptions of SNSs use as educational tool during their learning process. "RQ13. Any comments or concerns you would like to say about the use of SNSs as an educational tool?"

Two themes emerged from participants' narratives regarding this research question as shown in table 12.

Table 12

Preliminary Codes

Code	No. of participants contributing
SNSs are an important educational tool	20
Modern SNSs increases students' knowledge	9
SNSs was a good experience	7
Perfect tool for a good communication	10
Brings entertainment in learning	12

The identified codes were grouped into two themes to identify overarching commonalities between participants. The themes were named to indicate their significance as answers to the research question. The first theme was called "SNSs have

become important educational tools for improving students' performances," and the second was called "SNSs makes learning an entertaining activity and enhances communication between students and teachers." The number of participants contributing to each theme is depicted below in table 13.

Table 13

Themes

Theme	No. of participants contributing
Theme 1. *SNSs have become important educational tools for improving students' performances* • SNSs are important educational tools • Modern SNSs increases students' knowledge	26
Theme 2. *SNSs make learning an entertaining activity, and enhances communication between students and teachers* • Perfect tool for a good communication • Brings entertainment in learning • SNSs was a good experience	27

The two major themes identified to answer this research question are discussed next in more details.

Theme 1. SNSs have become important educational tools for improving students' performances. More than half of the participants reported that SNSs had a positive effect on students' academic performance. The participants argued that SNSs improve the creative thinking of students through interaction with experts in the field. For example, participant 3 stated, "I believe that modern SNSs use in learning especially this organized training course which has contributed in raising students' knowledge of the course content. Even though there are some difficulties and neglect from some students. I think SNSs use needs to become a habit for students during their learning to be more effective and efficient to all of us." Participant 4 provided a similar response, stating "in fact, SNSs use as an educational tool has become an important tool to be used especially in the current circumstance" Participant 9 emphasized the importance of SNSs in the classroom in order for performance improvement "it saves time and improves the learning process."

Theme 2. SNSs make learning an entertaining activity and enhances communication between students and teachers. Twenty-seven participants expressed that SNSs make learning interesting and enhance communication between learners and their teachers. When SNSs are controlled and used in the right manner, it improves the learning environment. Participants noted that students feel involved in the learning process and improve their grades. Participant 11 noted "It's beautiful to use SNSs in education but it should not be principle tool during the learning process. The lecturer must be the mandatory tool for learning. Then SNSs can be used only for discussions for what the lecturer illustrated in the lecture." Participant 15 described SNSs, saying "it's a perfect tool for effective communication between students and their lecturers because it's quick to send information to students and it's easier to understand discussion in SNSs with their professor in an informal way." Participant 25 emphasized the importance of SNSs by stating "Easy to use it and it's very helpful." Participant 31 described SNSs as one of the best technologies in education and so far, "One of the best educational methods."

Summary

The purpose of this mixed method study which has a pre-survey and a post-survey was to determine if the implementation of an instructional training course on SNSs use was effective in increasing students' academic performance. Students in the chosen MIS course were by default divided into two sections due to the higher number of students who registered in the course. The first section was the control group which did not receive an instructional training course and the other section was the experimental group which had an instructional training course. One-way analysis of covariance (ANCOVA)

was conducted in order to detect significant differences in midterm 2 scores between the experimental and control groups while controlling for midterm 1 scores. Additionally, scores of midterms 1 and 2 were compared within and between the groups. After adjustment for midterm 1 scores, there was a statistically significant difference in midterm 2 scores between the interventions. Midterm 2 scores were statistically significantly greater in the experimental group vs. the control group. Supplementary analysis revealed that there were no significant differences in midterm 1 scores between the control group and the experimental group, however the experimental group had significantly greater midterm 2 scores than the control group. The difference in midterm 1 to midterm 2 scores in the control group was significant but small. In the experimental group, the difference between midterm 1 and midterm 2 scores was substantial.

More than half of the participants reported that SNSs had a positive effect on students' academic performances. The participants argued that SNSs improves the creative thinking of students through interaction with experts in the field. Additionally, most participants expressed that SNSs make learning interesting and enhances communication between learners and their teachers.

What follows in Chapter 5 is a discussion about how the study results are interpreted in the context of the theoretical framework. Any limitations of the study results will be provided. Additionally, recommendations for future research will be discussed.

Chapter 5

Conclusions, Implications, Recommendations, and Summary

Overview

The main purpose of this chapter is to summarize the results found and discussed in the previous chapter. The chapter consists of different sections, which include study conclusions, research implications, future recommendations, and a summary.

Conclusions

The research was guided by a single research question and hypothesis as indicated again below:

RQ1: Will the implementation of an instructional training course in effective SNSs use as an educational tool affect Saudi Arabian students' academic performance in a blended learning environment?

RQ2: What are the leaners' perceptions regarding the effectiveness of SNSs use as an educational tool?

Hypothesis: The implementation of an instructional training course in effective SNSs use as an educational tool will have a statistically significant effect on Saudi Arabian students' academic performance (as measured by students' grades) in a blended learning environment.

During the study, students were at two sections of the course: the first section was the control group and the second section was the experimental group. The control group did not receive instructional training on SNSs use like the experimental group. The midterm scores for the two groups were compared. The experimental group had a positive performance change between midterm 1 and 2 scores. The control group had no significant change in performances. The large changes in the experimental group indicated that the instructional training course guiding students in the use of SNSs as an academic tool was effective at increasing students' academic performances in the classroom (Ifinedo, 2016). The instructional training was missing in the control group thus there was no increase in students' performances.

The findings of this research provided some noteworthy results. The independent variable, midterm 2 score, indicated that SNSs have an influence on the academic performances of students. The dependent variable, group type, also affected students' outcomes. Students in the trained group recorded an improvement in their midterm 2 scores. The findings of this study suggest that teachers need to develop templates to guide students on how to positively use social media in classrooms as educational tools. Schools management also needs to create and implement policies and regulations that guide the use of social media in schools to enhance student performance. Students who properly use SNSs for educational communication record improved grades. The SNSs provide numerous opportunities for learning and collaboration. Education stakeholders can use SNSs to enhance education by making it more engaging and interesting. When used in the right manner as noted by Koranteng et al. (2019), social media improves the

lives of both, students and teachers, and boosts their interactions and academic performance.

According to the findings, schools can harness the power of SNSs and implement them to provide better learning conditions, share important information, and engage the leaners. The findings also showed that students like to spend time on social media sites such as Facebook, Snapchat and Instagram for learning and communicating. SNSs help students get the latest assignment information, understand complex projects, prepare for tests, and take part in group discussions. These sites make the lives of students in schools and colleges easier, hassle-free, and simpler. As technology continues to advance, the need for collaboration and staying connected is growing. The findings in the previous chapter show that SNSs help students to create a strong network and learn from their classmates by exchanging ideas. The students also get an opportunity to interact with experts and professionals, thus enhancing their understanding.

SNSs can be applied in learning to enhance student cooperativity and engagement. Previous and current studies have found social media has a positive impact on students and teens at large. With SNSs, there is also easier collaboration between students and their teachers (Tsutsuin & Takada, 2018). Technology is good for streamlining group learning in classrooms. Students can make class groups on social media sites such as Facebook and use integrated messaging and video chat tools to discuss important class work. The findings of this research are consistent with the arguments of Tsutsui and Takada (2018) networking is essential for students in higher learning institutions. The authors

argue that students need SNSs to connect to professionals and experts to increase their knowledge level.

SNSs are an important technology that students need to be familiarized with. According to Christensen (2020), social sites are mainly used as communication tools between learners and their teachers. This makes them an important element in the learning process. SNSs offer an interactive platform and create new learning spaces. As technology continues to advance, distance learning is increasingly being adopted by many learning institutions. The findings of the current study indicate that this can be enhanced through the use of SNSs. Participants reported that students improve grades when interaction with lecturers was more informal. Also, more students take an active role in group discussions when SNSs are used.

Study Limitations

The research question was fully addressed in the current study. However, like all research, this study was not without inevitable limitations. First, the research was only limited to MIS department at TU in Saudi Arabia. All of the participants who took part in this study were taken from MIS department at TU. Limiting the participant sample to only one college reduced the generalizability of the current findings. Therefore, generalizing the findings for an entire country may not be correct since the study was only conducted in one learning institution (Grix, 2018). This is because each organization has their own specific cultural values, norms and beliefs that influence activities within the institution. Therefore, it is not guaranteed that the responses provided by the participants in the current study would be like those provided by respondents from other

colleges. Also, the researcher used many students but failed to include a significant number of teachers, who were later discovered to be a good source of quality data.

Study Implications

The findings of this study show that instructional training courses guiding students in the use of SNSs can be used as academic tools to effectively improve students' academic performances. The current researcher has demonstrated this through several findings in the previous chapters. Clear demonstrations on the effectiveness of the instructional training are important for modernizing educational leaders in Saudi Arabia. The demand for improved students' performances, both academically and socially, is on the rise due technology advancement. Since the 1990s, education sectors across the world are undergoing several changes in order to incorporate technology (Ifinedo, 2016). Therefore, modern instructional training must offer a platform for teachers and students to improve interaction. Existing trends, show that instructional design is increasingly becoming an important tool used by learning institutions to identify the needs of their students, define individual and organizational goals, and then plan and assess the methods to help both teachers and learners achieve the goals. The SNSs training programs outlined in this study can be used to improve the quality of education.

Only one learning institution was used in the study. Therefore, the researcher can only infer that this study would yield the same results in other learning institutions within Saudi Arabia. It is important for leaders from all learning institutions to attempt adaptation of instructional training programs in the implementation of SNSs, as this study indicates that will improve students' academic performances. It is also necessary for leaders to refer to benchmark institutions that have successfully implemented SNSs in

classrooms. In addition, colleges that have currently adopted SNSs instructional training should continue with this trend to keep classroom performances high (Koranteng, Wiafe & Kuada, 2019).

One important issue that arose during the study was that students spent a lot of time on social network sites instead of concentrating on academics. Even though trainers might provide learning guides to students on how to positively integrate SNSs into their studies, students might still be attracted to chatting on SNSs during class time. Lack of cooperation between teachers and students may aggravate the situation, making it difficult for the programs to be successful (Koranteng et al., 2019). Participants in this research provided some insights on how important SNSs can be in enhancing the learning experience. Participants indicated that their interaction with the instructor was improved. However, the decision to implement instructional training to help students integrate SNSs in their learning depends on the individual management of an institution (Koranteng et al., 2019). They need to carefully analyze how the programs benefits both students and teachers in their own institution before making final decisions.

Schools can also use SNSs for extracurricular activities and guidance. The sites, if well implemented, can be utilized in delivering important school notices to the students (Doleck & Lajoie, 2018). General school announcements can be delivered through the SNSs. Learning institutions can also use these sites to improve student guidance by providing counseling through the sites. This counseling can be personalized and confidential. Students who post troubling questions can be lifted up by colleagues or approached by a counselor. Social bonds can also be strengthened by hosting social events such as photo sharing on SNSs and highlighting fun things for the students.

Schools can use SNSs to create a communicative culture which helps in the reduction of dissonance.

Future Research Recommendations

As indicated earlier, the current study was limited to the MIS department at TU in Saudi Arabia. The study also has a high generalizability and may be difficult to apply to other contexts or the entire country of Saudi Arabia. Therefore, the researcher recommends that future researchers investigate how SNSs can be implemented in schools without negatively impacting students' performances.

According to the findings of the current study, students reported spending a lot of time chatting on SNSs during class time. Therefore, future researchers need to find a way through which the SNSs can only be limited to classwork in order to further improve students' performances. Institutions should implement effective strategies that will ensure that students do not chat through SNSs during class hours. Students might spend a lot of time on social media and have less time to complete homework and attend classes. Lack of self-control will result in low academic confidence. Several studies have linked excessive use of social media with poor academic results in different parts of the world. These studies not only include traditional social media sites such as Facebook and Twitter but majority of SNSs that involve texting and video-chatting. Doleck and Lajoie (2018) also found that young adults spent a lot of time on SNSs. Other than watching movies, SNSs was listed as a reason for poor grades in schools today. According to Doleck and Lajoie (2018,) 98% of college students own digital devices. In the same research, the majority of these students use their phones at least every 10 minutes.

Institutions need to instruct students so that excessive us of SNSs do not negatively affect class performance.

Future studies should use a large sample size from several colleges and other learning institutions across the country. A larger sample size extracted from several institutions will provide results that would better indicate a solution applicable to the whole country rather than a single institution (Koranteng et al., 2019). Additionally, future studies could research the topic using a quantitative or mixed approach and compare their findings to the current ones. Using this approach, future researchers could base their investigations on the findings of the current study. Researchers also need to find ways to minimize negative effects of SNSs in classrooms.

Additionally, there are no existing studies regarding how SNSs can be used to improve students' social behaviors and relationships both in schools and at home. As such, future researchers might want to investigate this topic. Such a research study will help to create literature on the connection that exists between SNSs and the social relationships of students. Scholarly literature on this topic is scarce, as shown in literature section of this study. Also, the researcher recommends that instructional trainers need to be individuals who have used SNSs before either in the learning or teaching process. This way, they could draw from their academic experiences and implement those findings into the training programs.

Recommendations

This study provides novel findings into the question of whether an instructional training course in SNSs can be used as an effective educational tool in improving Saudi Arabian students' academic performance in blended learning environment. The findings

indicate that effective implementation of instructional training programs in schools improve academic performances. According to Doleck and Lajoie (2018), students seem to learn better when they exchange ideas with their classmates. SNSs make students more motivated; earn more grades and become more engaged. For this reason, institutions need to identify best ways through which they can incorporate SNSs in their classrooms. Doleck and Lajoie (2018) further argue that instructional training is more appealing to younger, socially conscious students and it is based on the fact that many minds are better than one. Social platforms improve communication between teachers and shy students. Some learners feel shy to speak in front of their teachers and classmates and therefore, SNSs help them feel more comfortable when putting across their ideas. The sites provide a back door for individuals that feel intimated in classrooms, including teachers. Students' interaction through SNSs depends largely on writing hence writing skills will also be improved.

Secondly, even though SNSs can be used as an effective educational tool to enhance students' performances, the negative effects should not be underestimated. Institutions should implement effective strategies that will ensure that students do not chat through SNSs during class hours. Students might spend a lot of their time on social media thus having little time to complete homework and attending classes. Without control it will result in low academic confidence and more problems affecting their schoolwork. Several studies have linked excessive use of social media with poor academic results in different parts of the world. These studies not only include traditional social media sites such as Facebook and Twitter but majority of SNSs that involve texting and video-chatting. Doleck and Lajoie (2018) also found that young adults spent a lot of

time on SNSs. Other than watching movies, SNSs was listed as a reason for poor grades in schools today. 98% of college students according to Doleck and Lajoie (2018) own digital devices, which enable them to communicate from time to time. In the same research, majority of these students do not spend more than 10 minutes without using their phones. Therefore, institutions need to find ways to ensure that their students do not negatively affect their class performances with excessive use of SNSs when in classrooms.

Another recommendation is that the interaction between students and students and between teachers and students should be considered as the primary element before implementing SNS in classrooms. The application of SNS, as indicated by this study is a useful tool for organizing, discussing and summarizing especially during collaborative class works. SNSs are most effective when students' participation and collecting different views on a particular topic is required. They offer a better method of communicating important activities in school and collecting students' feedback on key issues. In this study, SNSs were important in forming social relationships between students and teachers and between students and students. Teachers first provided guidance and the learning objectives before introducing collaborative activities to work on. Students research about a given topic and post their findings on SNSs to compare their findings with those of their classmates. This way, the students can learn from each other with little intervention of the teachers.

Schools can also in future use SNS for both class work and extra educational activities. The sites, if well implemented can be utilized in delivering important school notices to the students (Doleck & Lajoie, 2018). Such activities as homework diaries and

school announcements can be delivered through the SNSs. Learning institutions can also use these sites to improve student guidance by providing counseling through the sites. The advantage is that the counseling can be personalized and confidential. No unauthorized person can access the counseling. The teaching process is enhanced as the teachers can use videos and pictures in elaborating important concepts. Social bonds can also be strengthened by hosting social events such as photo sharing on SNSs and highlighting important news for the students. Students post troubling questions and seek help from their colleagues. Schools can use SNSs to create a communicative culture which helps in the reduction of dissonance.

Summary

The purpose of this mixed method study was to determine if the implementation of an instructional training course on the effective use of SNSs as an educational tool might lead to improvements in academic performance as well as to explore students' perceptions about SNSs. A total of 69 students in the Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia participated. After a successful data collection process, data analysis for the quantitative results was carried out using ANCOVA and qualitative data were analyzed and organized into codes and themes. Results suggested that effective implementation of SNSs in the classroom improves student academic performance. Additionally, the findings indicated that instructional training on SNSs can have negative effects on students' performances if not well managed. The study also suggested that institutions need to train their teachers how to effectively handle SNSs in classroom.

Notably, the study was impacted by the nationwide lockdown imposed on Saudi Arabia as a result of the COVID-19 pandemic. The study took place over a period of approximately six weeks from March 16, 2020 to April 30, 2020, when the Saudi government imposed a strict curfew every day from 3 PM to 6 AM the next day throughout the entire duration of the study. The scores on Midterm 2 for the experimental group tended to be considerably higher when compared to Midterm 1, and the lockdown, curfew, as well as the higher level of communication and engagement resulting from the intervention may have all contributed to the significantly positive effect observed. In particular, the instructor observed every student on their daily participation and provided more extensive comments and feedback on their assignments, leading to tangible improvements in overall academic performance for many students.

This study shed light on how an instructional course helped students integrate SNSs into their studies within the context of a blended environment. The study also proved that the existing research on the negative effects of unmonitored SNS use in classroom is correct. The current study improved academic performance, as students were better equipped to manage their SNSs use. Generalizability was the biggest problem for this study. The researcher focused only on students from the Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia, making it difficult to make conclusions for the whole country.

Appendices

Appendix A: Training Course

Course Analysis

This training course is targeted towards undergraduate students in Management Information Systems (MIS) department at Taif University.

Purpose

It is designed to assist students to effectively manage and use social networking sites (SNSs) for educational purposes as well as assessing students' ability to use SNSs to support their learning. Also, it's designed to see if it will enhance students' academic performance.

Objective

To improve the effectiveness of students that are using SNSs in blended courses.

Course Period

The course will last for a period of 8 weeks. Please refer to the training course content and schedule for more information about the course outline.

Instructions and Tasks of Using Twitter as an educational tool

Brief: In educational settings, Twitter can be used as a communication tool to increase knowledge and awareness among students as well as teachers. Recent research supports the potential utility of SNSs in learning.

Tasks: (These tasks should be done in a daily basis to assist students' ability to use SNSs for their learning process).

1. Use Twitter to perform a review of current news about the use of SNSs in learning over the past 30 days.

2. Choose a related topic from your discovery and compose a tweet about what you have discovered. Note that a tweet cannot be longer than 280 characters.

3. Post the tweet you have written to Twitter using the hashtag #learning_by_the_use_of_SNSs. After posting on Twitter, search for the hashtag on Twitter and comment, reply, retweet, or like any post from your classmates.

Instructions and Tasks of Using WhatsApp as an educational tool

Brief: Your instructor will create a WhatsApp group and your phone number will be added to the group. This group will be used for informal discussions about the course materials, assignments, and any questions you may have about the course or the use of SNSs in the course. Also, the WhatsApp group will be used for daily discussions about the course materials. The instructor will give you a well-organized schedule about how discussions will be conducted in the group.

Tasks: (These tasks should be done in a daily basis to assist students' ability to use SNSs for their learning process).

1. Comment on the instructor's questions.

2. Search through the comments and find one that needs clarification about any issue pertaining to the topic of this learning course. Provide an answer to your classmate and then follow up to see if your answer was of any help.

Appendix B: The Pre-Survey

1. **Which of the following SNSs do you have an account for?**
   - o Twitter Only
   - o WhatsApp Only
   - o Facebook Only
   - o Two of the above
   - o All the above
   - o None of the above
2. **Have you used (at least one or all of) the above-mentioned SNSs during your previous semesters in academic coursework such as discussions, answering questions, and sharing information that are related to the course content?**
   - o Yes
   - o No
3. **How long have you been using the above-mentioned SNSs? (since you used your first SNSs)?**

   Less than 1 year — 1 to 3 years

   4 to 5 years — More than 5 years
4. **How many days per week do you use the above-mentioned SNSs?**

   1 to 2 days — 3 to 4 days

   5 to 6 days — All week
5. **How many hours per day do you use the above mentioned SNSs?**
   - o Less than 1 hour
   - o 1 to 3 hours
   - o 4 to 6 hours
   - o More than 6 hours
6. **On a regular basis, for what purpose do you use the above mentioned SNSs during or after your blended courses (Choose what is applicable)?**
   - o Personal purposes
   - o Educational purposes
   - o Social purposes
   - o All the above
7. **How regularly do you use the mentioned SNSs for social or personal purposes?**
   - o Once a day
   - o Several times a day
   - o Once every week
   - o Never

Appendix C: The Post-Survey

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1. Which of the following SNSs do you have an account for?

- o Twitter Only
- o Facebook Only
- o WhatsApp Only
- o Two of the above
- o All the above
- o None of the above

2. How many days per week do you use the above-mentioned SNSs?

1 to 2 days

3 to 4 days

5 to 6 days

All week

3. How many hours per day do you use the above mentioned SNSs?

- o Less than 1 hour
- o 1 to 3 hours
- o 4 to 6 hours
- o More than 6 hours

4. On a regular basis, for what purpose do you use the above mentioned SNSs during or after your courses (Choose what is applicable)?

- o Personal purposes
- o Educational purposes
- o Social purposes
- o All the above

5. How often do you use SNSs for learning purposes?

- o Once a day
- o Several times a day
- o Once every week
- o Never

6. Do you use SNSs during your classes /lectures to support your learning?

o Always o Mostly o Sometimes o Not at all

7. Do you think using SNSs as educational tools with a properly designed training course may positively affect your academic performance?

o Strongly agree o Agree o Neither agree nor disagree o Disagree o Strongly disagree

8. How often do you use SNSs during your classes /lectures for non-academic activities (socialize)?

o Always o Mostly o Sometimes o Not at all

9. In what ways did/do you interact with the class using SNSs in any of the following formats (choose more than one if applicable):

- o Posted /tweeted or retweeted a comment.
- o Shared information /links, etc.
- o Liked /favorited or retweeted items.
- o Looked at what others posted/did but generally did not interact.
- o Looked at what others posted/did with an interaction.
- o Some of the above
- o Never used.

10. The training course content was easy to understand and implement in my coursework?

o Strongly agree o Agree o Neither agree nor disagree o Disagree o Strongly disagree

11. I think SNSs use as educational tool can increase students' motivation to learn?

o Strongly agree o Agree o Neither agree nor disagree o Disagree o Strongly disagree

12. I think SNSs use as educational tool has facilitated interaction and communication between instructor and students.

o Strongly agree o Agree o Neither agree nor disagree o Disagree o Strongly disagree

13. Any comments or concerns you would like to say about the use of SNSs as an educational tool?

Appendix D: IRB Approval Memo

NOVA SOUTHEASTERN UNIVERSITY
Institutional Review Board

MEMORANDUM

To: **Nawwaf Altalhi**

From: **Wei Li, Ph.D,**
Center Representative, Institutional Review Board

Date: **February 6, 2020**

Re: **IRB #: 2020-54; Title, "Enhancing Students' Academic Performance in Blended Learning by Reducing SNSs Misuse"**

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review under **45 CFR 46.101(b) (Exempt 2: Interviews, surveys, focus groups, observations of public behavior, and other similar methodologies)**. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

1) CONSENT: If recruitment procedures include consent forms, they must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.

2) ADVERSE EVENTS/UNANTICIPATED PROBLEMS: The principal investigator is required to notify the IRB chair and me (954-262-5369 and Wei Li, Ph.D, respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.

3) AMENDMENTS: Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: Ling Wang, Ph.D.
Ling Wang, Ph.D.

3301 College Avenue • Fort Lauderdale, Florida 33314-7796
(954) 262-5369 • 800-672-7223, ext. 5369 • Email: irb@nova.edu • Web site: www.nova.edu/irb

Appendix E: Informed Consent Statement

College of Computing and Engineering
NOVA SOUTHEASTERN UNIVERSITY | NSU Florida

General Informed Consent Form
NSU Consent to be in a Research Study Entitled
The Effect of Instruction on Use of SNSs as an Educational Tool on Academic Performance: An Experimental Pre-test Post-test Design

Who is doing this research study?

Principal Investigator: Nawwaf Mohssen Altalhi, who has a bachelor's degree in Management Information Systems, and a master's degree in Information Technology Management

Faculty Advisor/Dissertation Chair: Dr. Ling Wang, who has a Ph.D. in educational technology and a statistical consulting certificate

Co-Investigator(s): No Co-Investigator

Site Information: No research sites

Funding: Unfunded

What is this study about?

This is a research study, designed to test and create new ideas that other people can use. The purpose of this research study is to determine if the implementation of an instructional training course on the effective use of SNSs as an educational tool might lead to improvements in academic performance. This study will examine the effect of the instructional training course on the effective use of SNSs and the academic performance of between 50 and 70 students in the Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia. These students will be currently enrolled in MIS classes for Winter 2020 in which there may be a benefit to implementing SNSs as an educational tool.

Why are you asking me to be in this research study?

You are being asked to be in this research study because you are undergraduate students in Management Information Systems department at Taif University. you are chosen to use SNSs as educational tool during your learning process in a blended learning environment because blended learning environment is perfect for implementing this type of interventions which is the training course. This study will include about 50 to 70 people.

What will I be doing if I agree to be in this research study?

While you are taking part in this research study, after taking your 1st midterm exam, you will participate in a developed training course for 8 weeks, the first week starts with a pretest survey, following weeks will have some tasks and activities to be performed on the assigned SNSs which are related to your course materials, 15 to 30 minutes on each SNSs every day. PLUS the last week will have a posttest survey.

Research Study Procedures - as a participant, this is what you will be doing:

In this study, you will be asked to participate in a pretest survey and give some background information about your use of several SNSs and your participation in the pretest survey should take 10 to 15 minutes. Also, the training course will ask you to perform some tasks or assignments on the assigned SNSs. These tasks are the steps of doing your course assignments and discussions, which are part of your course work, by using the assigned SNSs. The tasks are designed to be interesting and pleasant. We are not evaluating you, rather we are investigating to what extent can SNSs be used as educational tools and if so, do SNSs enhance academic performance if they were used as educational tools. Each task you perform on the assigned SNSs will take from 15 to 30 minutes (it's about posting your answers, sharing them, discussing some related topics, or replying to peers on SNSs). Your participation in the training course will take 6 to 8 weeks (it starts after the 1st midterm exam and ends after the 2nd midterm exam). Also, all the information you give us and all the data we collect, including your tasks performance in the assigned SNSs, are not associated with your name and the researcher guarantees you that.

Are there possible risks and discomforts to me?

To the best of our knowledge, there are no physical or psychological risks associated with the procedures in our study.

What happens if I do not want to be in this research study?

If you decide not to be part of the study, whether before or after the experimental study is started, you have the right to leave the participation process. All what you need to do is to notify the instructor and you will be removed from the experimental process.

Are there any benefits for taking part in this research study?

No there are not any benefits for taking part in this study.

Will I be paid or be given compensation for being in the study?

You will not be paid or given compensation for your participation in the study.

Will it cost me anything?

This research study will not cost you anything during your participation process.

How will you keep my information private?

Information we learn about you in this research study will be handled in a confidential manner, within the limits of the law and will be limited to people who have a need to review this information. The collected data in the research study is known as a non-identifiable information. The non-identifiable data will be available to the researcher, the Institutional Review Board and other representatives of this institution, and any regulatory and granting agencies (if applicable).

If we publish the results of the study in a scientific journal or book, we will not identify you. All confidential data will be kept securely in an online cloud server and the researcher will have a secured account in an online store server such as iCloud from Apple or One Drive from Hotmail. All data will be kept for 36 months from the end of the study. All records must be kept for a minimum of 36 months after the final approval is received for the dissertation report by my chair, Dr. Ling Wang and the committee members. The stored data will be destroyed after the specified time, for storing the research data is passed, by the researcher from the storing cloud server and the account of that server will be deleted as well.

What Student/Academic Information will be collected and how will it be used?
The following information will be collected from students' educational records during the implementation of the experimental study, grades of 1st midterm, and 2nd midterm exams. These records will be used to see if the implementation of the training course had a positive effect on students' academic performance as well as assisting students' ability to use SNSs in a blended learning environment. The lecturer of the course will send students' records to the Principal Investigator in a form of incomplete transcripts because the study will end before final exams are taken.

Whom can I contact if I have questions, concerns, comments, or complaints?

If you have any questions that are regarding the research study, your participation process in the study, or your rights as a participant, please, do not hesitate to contact Nawwaf Altalhi at: 0507000144 or via email at na705@mynsu.nova.edu. Also, you can contact my dissertation chair Dr. Ling Wang via her email at lingwang@nova.edu

Research Participants Rights
For questions/concerns regarding your research rights, please contact:

Institutional Review Board
Nova Southeastern University
(954) 262-5369 / Toll Free: 1-866-499-0790
IRB@nova.edu

You may also visit the NSU IRB website at www.nova.edu/irb/information-for-research-participants for further information regarding your rights as a research participant.

All space below was intentionally left blank.

Research Consent & Authorization Signature Section

Voluntary Participation - You are not required to participate in this study. In the event you do participate, you may leave this research study at any time. If you leave this research study before it is completed, there will be no penalty to you, and you will not lose any benefits to which you are entitled.

If you agree to participate in this research study, sign this section. You will be given a signed copy of this form to keep. You do not waive any of your legal rights by signing this form.

SIGN THIS FORM ONLY IF THE STATEMENTS LISTED BELOW ARE TRUE:

- You have read the above information.
- Your questions have been answered to your satisfaction about the research.

Adult Signature Section

I have voluntarily decided to take part in this research study.

Printed Name of Participant	Signature of Participant	Date
Printed Name of Person Obtaining Consent and Authorization	Signature of Person Obtaining Consent & Authorization	Date

Appendix F: Permission Letter from Taif University

VISION 2030

TU
TAIF UNIVERSITY

To whom it may concern,

The purpose of this letter is to grant **Mr. Nawwaf Altalhi, who is a PhD student in College of Computing and Engineering at Nova Southeastern University (NSU) in Florida,** the permission to conduct his research during winter semester of 2020 in Management Information Systems (MIS) department at Taif University (TU) in Saudi Arabia.

We, as faculty members at the MIS department in TU, will be assisting Mr. Nawwaf during his data collection process and we would like to see the results of his study.

Best regards,

Dr. Saud Alnefaie
Chair of Management Information Systems department
Taif University
Email: s.alnefaie@tu.edu.sa

References

Ainin, S., Naqshbandi, M. M., Moghavvemi, S., & Jaafar, N. I. (2015). Facebook usage, socialization and academic performance. *Computers & Education, 83*, 64-73. doi:10.1016/j.compedu.2014.12.018

Arnold, L. E., Hodgkins, P., Kahle, J., Madhoo, M., & Kewley, G. (2015). Long-term outcomes of ADHD: Academic achievement and performance. *Journal of Attention Disorders,* 108705471456607. doi:10.1177/1087054714566076

Asterhan, C. S., & Rosenberg, H. (2015). The promise, reality and dilemmas of secondary school teacher–student interactions in Facebook: The teacher perspective. *Computers & Education, 85*, 134-148. doi:10.1016/j.compedu.2015.02.003

Alkaabi, S. A., Albion, P., & Redmond, P. (2017). Social network misuse in the classroom and its impact on male student motivation in UAE tertiary education. *IAFOR Journal of Education*, *5*(SI), 115-131. doi:10.22492/ije.5.si.05

Alt, D. (2018). Students' perceived constructivist learning environment. *European Journal of Psychological Assessment, 34*(6), 432-443. http://dx.doi.org/10.1027/1015-5759/a000358

Berezowitz, C. K., Yoder, A. B., & Schoeller, D. A. (2015). School gardens enhance academic performance and dietary outcomes in children. *Journal of School Health, 85*(8), 508-518. doi:10.1111/josh.12278

Bista, K. (2015). Is Twitter a pedagogical tool in higher education? Perspectives of education graduate students. *Journal of the Scholarship of Teaching and Learning, 15*(2), 83-102. doi:10.14434/josotl.v15i2.12825

Boelens, R., Wever, B. D., & Voet, M. (2017). Four key challenges to the design of blended learning: A systematic literature review. *Educational Research Review, 1*(22), 1-18. doi:10.1016/j.edurev.2017.06.001

Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of computer□mediated Communication*, *13*(1), 210-230.

Bowyer, J., & Chambers, L. (2017). Evaluating blended learning: Bringing the elements together. *Research Matters*: *A Cambridge Assessment Publication*, *23*, 17-26 Retrieved from https://www.cambridgeassessment.org.uk/Images/375446-evaluating-blended-learning-bringing-the-elements-together.pdf

Broadbent, J., & Poon, W. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *The Internet and Higher Education, 27*, 1-13. doi:10.1016/j.iheduc.2015.04.007

Bulut, S. (2019). Assessing online learners' academic self-efficacy in a symbiotic learning environment. *SSRN Electronic Journal*. doi:10.2139/ssrn.3370615

Camilia, O. N., Ibrahim, S. D., & Dalhatu, B. L. (2013). The effect of social networking sites usage on the studies of Nigerian students. *The International Journal of Engineering and Science, 2*(7), 39-46. Retrieved from http://www.theijes.com/. doi: 10.3126/ijssm.v3i4.15962

Cao, X., Masood, A., Luqman, A., & Ali, A. (2018). Excessive use of mobile social networking sites and poor academic performance: Antecedents and consequences from stressor-strain-outcome perspective. *Computers in Human Behavior, 85*, 163-174. doi:10.1016/j.chb.2018.03.023

Chase, K., & Abrahamson, D. (2015). Reverse scaffolding: A constructivist design architecture for mathematics learning with educational technology. *In Proceedings of the 14th International Conference on Interaction Design and Children* (pp. 189-198). ACM.

Chen, W. S., & Yao, A. Y. (2016). An empirical evaluation of critical factors influencing learner satisfaction in blended learning: A pilot study. *Universal Journal of Educational Research, 4*(7), 1667-1671. doi:10.13189/ujer.2016.040719

Christensen, M. I. (2020). What happens beyond the classroom: Scaffolding at a social network site. *Electronic Journal of Foreign Language Teaching*, *17*(1).

Churcher, K. M. A., Downs, E., & Tewksbury, D. (2014). "Friending" Vygotsky: a social constructivist pedagogy of knowledge building through classroom social media use. *The Journal of Effective Teaching*, *14*(1), 33-50. Retrieved from https://files.eric.ed.gov/fulltext/EJ1060440.pdf

Coleman, B. C., Pettit, S. K., & Buning, M. M. (2018). Social media use in higher education: do members of the academy recognize any advantages? *The Journal of Social Mediain Society, 7*(1), 420-442. Retrieved from http://thejsms.org/index.php/TSMRI/article/view/376

Corsalini, N. N., & Teklemariam, G. K. (2014). Relationship between Facebook practice and academic performance of university students. *Asian Journal of Humanities and Social Sciences, 2*(2), 31-37. Retrieved March 18, 2019, from www.ajhss.org.

Dabbagh, N., & Kitsantas, A. (2012). Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal

learning. *The Internet and Higher Education*, *15*(1), 3-8. doi:10.1016/j.iheduc.2011.06.002.

Doleck, T., & Lajoie, S. (2018). Social networking and academic performance: A review. *Education and Information Technologies*, *23*(1), 435-465.

Downes, S. (2010). Learning networks and connective knowledge. *Collective Intelligence and E-Learning 2.0,* 1-26. doi:10.4018/978-1-60566-729-4.ch001

Eom, S. B., & Ashill, N. (2016). The Determinants of Students' Perceived Learning Outcomes and Satisfaction in University Online Education: An Update*. *Decision Sciences Journal of Innovative Education, 14*(2), 185-215. doi:10.1111/dsji.12097

Fang, Y., Nye, B., Pavlik, P. I., Jr., Xu, Y., Graesser, A. C., & Hu, X. (2017). Online Learning Persistence and Academic Achievement. *EDM*.

Flynn, L., Jalali, A., & Moreau, K. A. (2015). Learning theory and its application to the use of social media in medical education. *Postgraduate Medical Journal*, *91*(1080), 556-560. doi:10.1136/postgradmedj-2015-133358.

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The internet and higher education*, *7*(2), 95-105.

Giunchiglia, F., Zeni, M., Gobbi, E., Bignotti, E., & Bison, I. (2018). Mobile social media usage and academic performance. *Computers in Human Behavior*, *82,* 177-185. doi:10.1016/j.chb.2017.12.041

González, M. R., Gasco, J., & Llopis, J. (2016). Facebook and Academic Performance: A Positive Outcome. *The Anthropologist, 23*(1-2), 59-67. doi:10.1080/09720073.2016.11891924

Grady C. (2015). Institutional Review Boards: Purpose and Challenges. *Chest*, *148*(5), 1148–1155. doi:10.1378/chest.15-0706

Grix, J. (2018). *The foundations of research*. Macmillan International Higher Education.

Guy, R., Byrne, B., & Dobos, M. (2018). Optional anatomy and physiology e-learning resources: Student access, learning approaches, and academic outcomes. *Advances in Physiology Education, 42*(1), 43-49. doi:10.1152/advan.00007.2017

Habibi, A., Mukminin, A., Riyanto, Y., Prasojo, L. D., Sulistiyo, U., Sofwan, M., & Saudagar, F. (2018). Building an Online Community: Student Teachers' Perceptions on the Advantages of Using Social Networking Services in A Teacher Education Program. *Turkish Online Journal of Distance Education, 19*(1), 46-61. doi:10.17718/tojde.382663

Han, F., & Ellis, R. A. (2019). Identifying consistent patterns of quality learning discussions in blended learning. *The Internet and Higher Education*, *40*, 12-19. doi:10.1016/j.iheduc.2018.09.002

Harris, A. D., McGregor, J. C., Perencevich, E. N., Furuno, J. P., Zhu, J., Peterson, D. E., & Finkelstein, J. (2006). The use and interpretation of quasi-experimental studies in medical informatics. *Journal of the American Medical Informatics Association : JAMIA*, *13*(1), 16–23. doi:10.1197/jamia.M1749

Hassell, M., & Sukalich, M, (2016). A deeper look into the complex relationship between social media use and academic outcomes and attitudes (Unpublished doctoral dissertation). Marquette University, Milwaukee, WI.

Heale R, Twycross A. (2015) Validity and reliability in quantitative studies *Evidence-Based Nursing* 18**:**66-67

Hong, R., & Shaoi L. (2012). Learning from social media network. *Neurocomputing, 95*, 1-2. doi:10.1016/j.neucom.2012.02.025

Ifinedo, P. (2016). Applying uses and gratifications theory and social influence processes to understand students' pervasive adoption of social networking sites: Perspectives from the Americas. *International Journal of Information Management*, *36*(2), 192-206.

Jassim, L. L., & Dzakiria, H. (2019). Effective Use of Facebook in Improving English Communication Skills:A Conceptual Paper. *Disarat, Human and Social Sciences, 46*(2), 1-7.

Junco, R. (2015). Student class standing, Facebook use, and academic performance. *Journal of Applied Developmental Psychology, 36*, 18-29. doi:10.1016/j.appdev.2014.11.001

Kintu, M. J., Zhu, C., & Kagambe, E. (2017). Blended learning effectiveness: The relationship between student characteristics, design features and outcomes. *International Journal of Educational Technology in Higher Education, 14*(1). doi:10.1186/s41239-017-0043-4

Koranteng, F. N., Wiafe, I., & Kuada, E. (2019). An empirical study of the relationship between social networking sites and students' engagement in higher education. *Journal of Educational Computing Research*, *57*(5), 1131-1159.

Kumar-Basak, S., Wotto, M., & Bélanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-Learning and Digital Media*, *15*(4), 191-216.

Lau, W. W. (2017). Effects of social media usage and social media multitasking on the academic performance of university students. *Computers in Human Behavior, 68*, 286-291. doi: 10.1016/j.chb.2016.11.043

Lam, J. (2015). Collaborative learning using social media tools in a blended learning course. In *International Conference on Hybrid Learning and Continuing Education* (pp. 187-198). Springer, Cham.

Lam, J. (2017). Non-prescribed collaborative learning using social media tools in a blended learning course. *International Journal of Innovation and Learning, 21*(4), 449-466

Lewis-Beck, M. S., Bryman, A., & Futing Liao, T. (2004). *The SAGE encyclopedia of social science research methods*Thousand Oaks, CA: Sage Publications, Inc. doi: 10.4135/9781412950589

Liu, C. H., & Matthews, R. (2005). Vygotsky's Philosophy: Constructivism and Its Criticisms Examined. *International education journal*, *6*(3), 386-399. Retrieved from http://files.eric.ed.gov/fulltext/EJ854992.pdf

Liu, Q., Peng, W., Zhang, F., Hu, R., Li, Y., & Yan, W. (2016). The Effectiveness of Blended Learning in Health Professions: Systematic Review and Meta-Analysis. *Journal of Medical Internet Research, 18*(1). doi:10.2196/jmir.4807

Maarop, A. H., & Embi, M. A. (2016). Implementation of Blended Learning in Higher Learning Institutions: A Review of Literature. *International Education Studies, 9*(3), 41. doi:10.5539/ies.v9n3p41

Marker, C., Gnambs, T., & Appel, M. (2017). Active on Facebook and Failing at School? Meta-Analytic Findings on the Relationship Between Online Social Networking

Activities and Academic Achievement. *Educational Psychology Review, 30*(3), 651-677. doi:10.1007/s10648-017-9430-6

Michikyan, M., Subrahmanyam, K., & Dennis, J. (2015). Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample. *Computers in Human Behavior, 45*, 265-272. doi:10.1016/j.chb.2014.12.033

Mehmood, S., & Taswir, T. (2013). The effects of social networking sites on the academic performance of students in college of applied sciences, Nizwa, Oman. *International Journal of Arts and Commerce, 2*(1), 111-125. doi: 10.11648/j.ajad.20170204.13

Nino, M., & Evans, M. A. (2015). Fostering 21st-century skills in constructivist engineering classrooms with digital game-based learning. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaje, 10*(3), 143-149. doi: 10.1109/RITA.2015.2452673

O'Malley, M. (2015). Constructivism: the effects of the flipped classroom instructional model on high school senior AP biology students.

Park, E., Song, H., & Hong, A. J. (2018). The use of social networking services for classroom engagement? The effects of Facebook usage and the moderating role of user motivation. *Active Learning in Higher Education,* 146978741880922. doi:10.1177/1469787418809227

Peters, A. M., Costello, J., & Crane, D. (2018). Deviating From the Traditional Instructional Tools: Integrating Twitter in a Sociology of Deviance Course | S'éloigner des outils pédagogiques traditionnels : Intégrer Twitter dans un cours

sur la sociologie de la deviance. *Canadian Journal of Learning and Technology / La Revue Canadienne De L'apprentissage Et De La Technologie, 44*(3). doi:10.21432/cjlt27792

Piaget, J. (2013). The construction of reality in the child (Vol. 82). *Routledge*.

Rheinheimer, D. C., & Penfield, D. A. (2010). The effects of type I error rate and power of the ANCOVAFTest and selected alternatives under Nonnormality and variance heterogeneity. The Journal of Experimental Education, 69(4), 373-391. https://doi.org/10.1080/00220970109599493

Robertson, J. D. (2016). Do facebook usage patterns influence individuals' ICT engagement? (Unpublished master's thesis). Victoria University of Wellington.

Shankar, P., Chung, R., & Frank, D. A. (2017). Association of food insecurity with children's behavioral, emotional, and academic outcomes: A systematic review. *Journal of Developmental and Behavioral Pediatrics, 38*, 135-150.

Shea, P., & Bidjerano, T. (2018). Online course enrollment in community college and degree completion: The tipping point. *The International Review of Research in Open and Distributed Learning, 19*(2). doi:10.19173/irrodl.v19i2.3460

Stockwell, B. R., Stockwell, M. S., Cennamo, M., & Jiang, E. (2015). Blended Learning Improves Science Education. *Cell, 162*(5), 933-936. doi:10.1016/j.cell.2015.08.009

Suerken, C. K., Reboussin, B. A., Egan, K. L., Sutfin, E. L., Wagoner, K. G., Spangler, J., & Wolfson, M. (2016). Marijuana use trajectories and academic outcomes among college students. *Drug and Alcohol Dependence, 162*, 137-145. doi:10.1016/j.drugalcdep.2016.02.041

Tang, Y., & Hew, K. F. (2017). Using Twitter for education: Beneficial or simply a waste of time? *Computers & Education, 106*, 97-118. doi:10.1016/j.compedu.2016.12.004

Tsutsui, K., & Takada, H. (2018). A classroom SNS to promote reflective activity in programming learning for children. *Research and Practice in Technology Enhanced Learning*, *13*(1), 2.

Tze, V. M., Daniels, L. M., & Klassen, R. M. (2015). Evaluating the Relationship Between Boredom and Academic Outcomes: A Meta-Analysis. *Educational Psychology Review, 28*(1), 119-144. doi:10.1007/s10648-015-9301-y

Wheaton, A. G., Chapman, D. P., & Croft, J. B. (2017). School Start Times, Sleep, Behavioral, Health, and Academic Outcomes: A Review of the Literature. *Journal of School Health, 86*(5), 363-381. doi:10.1111/josh.12388

Williams, P. E., Wall, N., & Fish, W. (2019). Mid-Career Adult Learners in an Online Doctoral Program and the Drivers of Their Academic Self-Regulation. *The International Review of Research in Open and Distributed Learning, 20*(1). doi:10.19173/irrodl.v20i1.3789

Yu, L., Shi, C., & Cao, X. (2019). Understanding the Effect of Social Media Overload on Academic Performance: A Stressor-Strain-Outcome Perspective. *Proceedings of the 52nd Hawaii International Conference on System Sciences*. doi:10.24251/hicss.2019.320

Zacharis, N. Z. (2015). A multivariate approach to predicting student outcomes in web-enabled blended learning courses. *The Internet and Higher Education, 27*, 44-53. doi:10.1016/j.iheduc.2015.05.002

Zientek, L., Nimon, K., & Hammack-Brown, B. (2016). Analyzing data from a pretest-posttest control group design. *European Journal of Training and Development, 40*(8/9), 638-659. doi: https://doi.org/10.1108/EJTD-08-2015-0066