JSSER
www.jsser.org

Journal of Social Studies Education Research

SosyalBilgilerEğitimiAraştırmalarıDergisi

2021:12 (4), 144-169

Digital Communication and Social Media Interaction to Improve the Academic Quality of Islamic Higher Education Lecturers

Ahmad Sultra Rustan[1]

Abstract

This study aims to examine the role of communication technology, as well as social media, by lecturers and students alike, in improving the quality of learning. To achieve this goal, 250 students and 65 professors from religious colleges in Parepare, Indonesia were recruited to participate in the study. Proportional random sampling was used to select the sample, and Google Forms was used to distribute surveys to students and lecturers using the WhatsApp communication application. Smart PLS 3.0 was later used for data analysis. We concluded that both in-class and online learning can be improved through the use of communication technologies, such as videoconferencing and teleconferencing. What is more, social media is more useful than communication technology when it comes to improving the quality of learning. In addition, this research found that these technologies worked better when used together rather than in isolation. As a result, it seems it is possible to better improve the quality of learning by increasing the use of communication technology and social media in tandem rather than just focusing on one or the other.

Keywords: *digital communication, literacy, academic quality, social media*

Introduction

The academic quality of professors must be maintained and improved on a daily basis to prevent it from deteriorating over the course of time. After completing their PhD studies, many professors feel satisfied with their careers, having mastered the art of scientific inquiry. However, as technology and knowledge improve, the skills of professors must improve as well (Hung & Yuen, 2010). Following rapid technological advancements and several developments in science, professors should be enhanced through a development process (Putri et al., 2019; Sugiyanta, 2021).

It is suggested that it may be possible to improve the academic quality of professors by using digital communication tools such as email and Facebook, as well as educational media that can enhance the technological literacy of professors (Hung & Yuen, 2010). Professors who are interested in developing academic competencies can use social media to connect with colleagues,

[1]*Dr. State Institute of Islamic Studies (IAIN) Parepare, Indonesia; Email: ahmadsultrarustan@iainpare.ac.id*

experts, and undergraduate, master's, and doctoral students, among others (Nur'Aini, 2021). What is more, the academic competency of lecturers must be constantly be improved through participation in a variety of academic activities, and it is possible to learn a diverse range of academic knowledge through relevant social media groups (Hung & Yuen, 2010; Watson, 2020; White, 2020). Additionally, numerous joint research activities, seminars, symposiums, workshops, certifications, courses, and various other academic activities can be made more effective through the use of communication technology (Budiharso & Tarman, 2020).

A hallmark of humanity's 21st-century development is how technology and information has revolutionized numerous fields of human understanding. Even in the domain of higher education, where technology has always played an enormous role, there has been a revolution in human life. Our communication technology is becoming increasingly sophisticated, and this can be leveraged to improve the academic quality of professors while also boosting the speed of communication (Alhumaid, 2020).

As a result of these technology breakthroughs, social networks have evolved from their rudimentary beginnings to the complex ones that exist today. As a result of these advancements, social networks have become an integral part of our everyday lives. Indeed, a little cosmic town has been created on our planet, one where civilization, culture, and various ways of life are flourishing at a breakneck pace (Solikhah & Budiharso, 2020). Multiple social media platforms are available today, with them bringing people from all over the world together in one virtual place. Technology and social media have infiltrated every aspect of daily life and all areas of the modern world's cultural, social, political, and economic existence (Alhumaid, 2020). Changes in communication technology and social media, particularly through the use of social networking sites, have been particularly noticeable in the education sector. The rising use of social networking sites like Facebook, Twitter, WhatsApp, and so on is considered to be representative of how technology is being used and applied in the educational process (Hung & Yuen, 2010). The virtual environment provided by social media platforms can be both flexible and customizable. Everyone involved in school can benefit from the use of communication technology and social media in the educational process, including students and teachers (Alhumaid, 2020).

Indeed, instructors can convey information, knowledge, and concepts to students through such platforms based on models that help their students to learn. Students and instructors also benefit from the use of technology and social media in terms of better quality learning processes and

outcomes (Brown, 2012). According to a number of studies, teachers utilize information technology to improve their students' academic performance (Brown, 2012; Dermentzi et al., 2017). Lecturers can also gain knowledge about a wide range of things that are important to their field of study by using modern information technologies (Hung & Yuen, 2010). When it comes to providing classes, professors can leverage information technology to the greatest extent possible (Lim et al., 2015).

Learning technology has evolved significantly in recent years (Dyson et al., 2015), because the use of technology can help optimize the educational process (Manca, 2020). Furthermore, technology can facilitate academics who are engaged in collaborative research activities (Al-Daihani et al., 2018). Indeed, research sharing is one way of bringing together researchers from different countries (Gu & Widén-Wulff, 2011). As a result, the use of information technology by lecturers can help them to become more professional. Most Indonesian institutions have acquired modern technology and offered it to their teachers, yet it has not been properly exploited by all academics (Alexander et al., 2019). Another issue is that instructors use technology for non-academic purposes (Manca, 2020).

According to the literature, there is a considerable relationship between the use of technology and the educational ability of lecturers (Veletsianos & Kimmons, 2013). Other studies have emphasized the need to use educational innovations in order to improve lecturers' educational competence (Goldsmith et al., 1995). Information technology can be used by lecturers in the form of social media, artificial intelligence tools, the Internet of Things, robotics, and digital badges, among other things, to create new experiences (Aldahdouh et al., 2017). When these new ideas are implemented, they may overcome many of the challenges that lecturers often face (Goldsmith et al., 1995).

Previous studies of the use of technology and social media by lecturers for increasing their academic competency have led to a research gap in this area. According to some experts, these three variables have a significant impact on one another and the overall outcome (Arts et al., 2011; Bartels & Reinders, 2011; Jin, 2013; Van-Rijnsoever & Donders, 2013). However, others have turned their backs on them, pointing out that there is no noticeable impact on teachers' academic skills as a result of using technology or social media (Roehrich, 2004). According to some studies, however, educators can reap benefits from using Web-based technology in their lessons, both within and beyond the classroom (Greenhow & Robelia, 2009). Indeed, students' academic

performance has been found to improve when teachers integrate technology into their lessons (Baytak et al., 2011; Rahmadi et al., 2020).

Only a few studies have shown that teachers who use social media improve their academic performance and become more effective teachers (Eynon & Malmberg, 2011). The social media model developed by lecturers has been unable to promote academic quality because social media does not promote academic communication (Ito et al., 2018). It has therefore not been easy for professors to enhance their academic prowess by using communication technologies more effectively (Bartels & Reinders, 2011), for example, tracked 79 relevant empirical research studies and concluded that the use of communication technology has not consistently influenced the academic quality of instructors.

The current study has three main goals: The first goal of this research is to investigate the use of communication technologies for improving the quality of learning provided by lecturers. The communication technology devices possessed by lecturers and students have the potential to improve academic quality, as evidenced by an increasing number of pupils who have mastered their subjects. The second goal is to examine the role of social media in improving the quality of learning, something that is characterized by an increase in knowledge, the academic service from lecturers to students, lecture preparation, and preparation for final assignments, such as theses and dissertations. The third goal is to investigate whether using communication technologies and social media together can further improve the quality of the education process.

Research Questions

The research questions to be answered by this research were:

1) Can communication technology, when used by lecturers and students, improve the quality of learning in higher education?
2) Can social media, when used by lecturers and students, improve the quality of learning in higher education?
3) Can the simultaneous use of communication technology and social media better improve the quality of learning in higher education?

Hypothesis

First Statistical Hypothesis

H_{01} :1 = 0 : The use of communication technology has no influence on the quality of learning for Islamic college students in Parepare.

Ha_{1} : $\gamma_1 \neq 0$: The use of communication technology influences the quality of learning for Islamic college students in Parepare.

Second Hypothesis Test

H_{02} : $\gamma_2 = 0$: The use of social media does not influence the quality of learning for Islamic college students in Parepare.

H_{a2} : $\gamma_2 \neq 0$: The use of social media influences the quality of learning for Islamic college students in Parepare.

Third Hypothesis Test

H_{03} : $\gamma_3 = 0$: The simultaneous use of communication technology and social media does not influence the quality of learning for Islamic college students in Parepare.

H_{a3} : $\gamma_3 \neq 0$: The simultaneous use of communication technology and social media does influence the quality of learning for Islamic college students in Parepare.

Literature Review

Communication Technology

Learning management systems, blogging tools, discussion forums, bookmarking sites, wikis, social networking sites (SNS), devices, cloud computing services, augmented reality, virtual reality, and so on are just a few examples of the diverse range of communication technologies that can be utilized in universities. However, this research focused on social networking, technological gadgets, and cloud computing services. According to research (Moran et al., 2011), technological advancements in communication can enhance student achievement.

Communication technology that requires the navigation of complex, professional networks has the potential to promote learning, according to Koltay et al., (2015). For example, Mendeley, a reference management system and academic social network (Gunn & Fisk, 2013), has helped scholars to assess the metrics and impact of their studies. A professional profile on LinkedIn can also be created, and this is frequently said to be used during job searching. In addition, the sharing

of research materials has been made easier thanks to ResearchGate and Academia.edu (Manca, 2020).

Cloud computing is a new paradigm for providing real-time, on-demand computing resources, such as networks, servers, storage, applications, and services (Mell & Grance, 2011), and this can offer great benefits for improving the quality of learning (Alharthi et al., 2015) when adopted in the field of higher education (Low et al., 2011).

Social media

One recent communication technology innovation can foster communication and collaboration on a global scale, and this is social media. Such services make it easier for humans to connect and communicate, so they can quickly increase the number of users they engage with on a daily basis. People that are well-versed in technology often use such services on a daily basis for both personal and professional reasons (Chugh & Ruhi, 2018).

The term "social media" actually refers to a collection of various web-based apps that have been created by IT pioneers without considering the potential benefits and drawbacks of what they have created (Kaplan & Haenlein, 2010). Blogs, forums, bookmarks, wikis, and other social media tools also fall under the umbrella term of "social media," because it encompasses a wide range of services (Chugh & Ruhi, 2018).

The quality of learning can be improved when students use social media (Al-Rahmi et al., 2015) (Dumpit & Fernandez, 2017; Dyson et al., 2015; Hamid et al., 2015; Hung & Yuen, 2010; Uusiautti & Määttä, 2014; Valenzuela et al., 2009). Unfortunately, there is still some disagreement about this in the literature. According to a recent study, social media is less effective than other forms of communication for enhancing the quality of learning (Al-Daihani et al., 2018; Khan & Ali, 2010; Dermentzi et al., 2017).

According to the findings of Gu & Widén-Wulff (2011), Twitter has a significant impact on the overall quality of learning and learning outcomes. The use of social media can also help to improve the professionalism of academics. According to the research of (Gruzd et al., 2012), social media can help companies to keep workers up to speed with their careers, promote jobs, and maintain a favorable public perception.

There are certain obstacles to overcome when using social media, however, such as privacy concerns (Gruzd et al., 2012), copyright concerns like plagiarism and content monetization, and

other concerns such as government regulation (Lupton, 2014). According to (Menzies & Newson, 2007), the use of social media can divert attention from knowledge creation to knowledge production. They posited that being constantly connected to social media limits people's ability to think deeply about their work, and as a result, this decreases their creativity.

According to Chugh & Ruhi, (2018), social media can be used in the classroom for a variety of reasons. One of the main purposes is to help both educators and students to learn and grow throughout their lives by promoting fairness and inclusion, thus raising the bar for educational institutions everywhere. Teachers and students alike can benefit from greater access to user-generated resources, something that is made possible by social media, and it offers a more engaged, self-directed approach to education. With the use of social media, students and teachers can share knowledge while also enjoying access to specialized, targeted information for a particular field of study. Student–teacher collaboration on specific projects and activities is also made possible through social networking, which allows a team of individuals working toward a common goal to share resources and knowledge.

Several further arguments for using social media in the classroom were discussed by Corcoran & Duane (2018), which includes the following. Student stories from both within and outside the classroom can be shared on social media, and students can also learn about stories from outside their school through social media. Thus, social media provides a platform for students to share their stories and helps them to recognize the importance of having their own distinctive voice.

The Effectiveness of Communication Technology and Social Media in Education

The integration of social media into learning and teaching environments may lead to new kinds of inquiry, as well as communication, cooperation, and identity work. It may also positively influence cognitive, social, and emotional states. Greenhow & Robelia (2009) described the formalized impact. According to the findings of Gu & Widén-Wulff (2011), social media platforms like Facebook act as perfect venues for students to interact, share information and resources, and engage with their peers. Ajjan & Hartshorne (2008) found that social networking sites encourage participation and critical thinking. Other studies have found them to encourage peer support and communication about course content and evaluation (Divall & Kirwin, 2012); intercultural language learning (Mills, 2011); and the expression of identity and digital literacy, particularly for marginalized students (Amin et al., 2019; Manca, 2020).

Some educators therefore make use of social media platforms. Two of the many educational applications for them is to publish research findings and set school assignments, among other things (Kenna & Hensley, 2019). On creating a Facebook page or group and inviting instructors and/or students to participate, one can encourage them to exchange information about educational issues and share links to resources. To help exchange ideas and information between teachers and students, instructional images and videos can also be shared and discussed (Madge et al., 2009; DeSchryver et al., 2009). For example, Livingstone (2008) held conferences and follow-up seminars on Twitter. Students and teachers can also collaborate on a project for a course using Twitter. In addition, Instagram began life as a photo-sharing app, but as new features like video, SMS, and stories were introduced, the app's popularity skyrocketed (Ellison, 2017). When using Instagram as a tool for language learning, (Handayani, 2016) claimed that students can engage in digital storytelling, grammar drills through images, role-playing, reading, and speaking drills through videos on the app. Furthermore, it is clear from the findings of Cetinkaya (2017) research that students develop good attitudes toward the use of WhatsApp in their educational endeavors.

Methods

Design

This study used correlation design (Christensen & Waraczynski, 1998) and linear correlational analysis as the research approach to analyze data (Riadi, 2016; Christensen & Waraczynski, 1998). Variables of this study were communication in social media perceived from three dimensions: communication technology, social media and teaching quality. Data were collected from these through a survey methodology, which is considered to be one of the best methods available because of its high accuracy for predicting phenomena. A descriptive research design was also employed in the study in order to describe the characteristics of the respondents and gather information (Mohajan, 2018). This study took place in Parepare South Sulawesi, Indonesia providing 5 Islamic universities in Parepare.

Sample

As inducated in table 1, in total there are 315 sample for this study comprised 250 sophomore and 65 professors selected from 5 religious universities in Parepare, Indonesia. All of the 12,564 students enrolled in the 2020/2021 academic year were included in this study's subject population.

A random stratification of the sample was applied in order to achieve the research's aims. Ultimately, some 65 lecturers and 250 students who used communication technologies, websites, and social media tools took part in the study. The universities were identified as Uni-1, Uni-2, Uni-3, Uni-4, and Uni-5 for ethical purposes.

Table 1
Sample of the study

No	University	Students,		Professor	
	N=315	F	%	F	%
1	Uni-1	50	15.9	13	4.13
2	Uni-2	50	15.9	13	4.13
3	Uni-3	50	15.9	13	4.13
4	Uni-4	50	15.9	13	4.13
5	Uni-5	50	15.9	13	4.13
	Total	250	79,5	65	20,5

Research Instruments

This research used a 18-item questionnaire devised as a Likert Scale option to gather data. The questionnaire was divided into two parts, with the first being for the professors, and the second being for the students. Each part was divided into two sections: The first section sought information about the respondents, while the second section contained items that were distributed among three variables: communication technology 4 items, social media 8 items, teaching quality 6 items as indicated in table 2.

Table 2
Research instrument grid

Variable	Dimension	Indicator	No. items
Communication technology (CT)	Technology device	Computer/laptop	CT1
		Smartphone	CT2
	Communication service	Communication in the form of assignments	CT3
		Communication in problem-solving for course material	CT4
Social media (SM)	Attitudes towards the use of social media in education	Use fully	SM1
		Use partially	SM2
	Benefits of using social media in education	Individual benefits	SM3
		Shared benefits	SM4
	The role of social media in education	Doing assignments with friends	SM5
		Collect assignments to the lecturer	SM6
	Challenges of using social media in education	Data confidentiality	SM7
		Hoax	SM8

Teaching quality (TQ)	Preparation quality	Learning program socialization	TQ1
		College contract socialization	TQ2
	Quality of execution	Quality of learning process	TQ3
		Quality of coursework	TQ4
	Quality evaluation	Mid-semester exam quality	TQ6
		End-semester exam quality	TQ6

The students and professors were invited to complete the questionnaire during the 2020/2021 academic year in order to measure all the research variables, with Google Forms being used to distribute the questionnaire. It used a five-point Likert scale with the following scores: highly agree (5), agree (4), undecided (3), disagree (2), highly disagree (1). Thus, the instrument was designed to measure how strongly people agreed or disagreed with a particular statement.

Validity of the Research Instrument

The validity and reliability of the data were examined. Table 3 shows the results of a validity test using the Smart PLS software to analyze the outer loads:

Table 3

The outer loadings

Variable	Communication technology (X1)	Social Media (X2)	Teaching quality
(Communication technology) (X1)	0.982		
	0.769		
	0.982		
	0.983		
(Social Media) (X2)		0.886	
		0.768	
		0.876	
		0.858	
		0.758	
		0.750	
		0.869	
		0.789	
			0.883
			0.931
			0.890
(Teaching quality) (Y)			0.963
			0.899
			0.893

It could therefore be concluded that all of the questionnaire items were valid based on the results of the validity test, with all r values being greater than 0.7 for all of the questionnaire items. In addition, the validity test revealed that the measure had high psychometric properties and could be used as a valid measure.

Reliability of the Research Instrument

The Cronbach's alpha and composite reliability were both used in this study to determine reliability. The reliability testing with composite reliability used the following decision criteria: A questionnaire item was considered reliable if its overall reliability score was greater than or equal to 0.7, otherwise it was considered unreliable. The calculations yielded the results shown in Table 4.

Table 4

Reliability test results

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Communication technology (X1)	0.948	0.965	0.964	0.871
Social Media (X2)	0.930	0.974	0.943	0.674
Teaching quality (Y)	0.959	0.962	0.967	0.829

These results show that the composite reliability values for each construct all have a value greater than 0.7, indicating that all the constructs are reliable. Similarly, when referring to the Cronbach's alpha, the values for all constructions are greater than 0.7, further indicating that they are all dependable.

Data Analysis

SPSS was used to perform descriptive analysis, while Excel was used to study spider diagrams. The Smart PLS program was used for the loading factor analysis in order to establish how each indicator contributed to the variables (Linting & Van Der Kooij, 2012). Indicator variables with a loading factor greater than 0.6 were analyzed in accordance with the criteria of Linting and Van Der Kooij (2012).

The correlation matrix R2 was used to determine the extent to which the independent variable contributed to the dependent variable, either in whole or in part. Thus, based on (Bishara & Hittner, 2012) ecommendation, the R2 strategy was selected.

The predicted model was tested with Smart PLS 3.0 using structural equation modeling, which provides a significant advantage in terms of comprehensive analysis (Green, 2016). Indeed, statistical tests on interval data made Smart PLS 3.0 ideal for data analysis in this study.

Results

This section presents results of the study in three parts: results of descriptive statistics analysis, classic assumption test that include normality test, homogeneity test, and linearity test. The hypothesis testing is displayed at the end of the results section.

The characteristics of the respondents are summarized in Table 5.

Table 5

Description of respondents

Characteristic	Description	Students	Professors
Other types	Man	102	29
	Woman	148	36
	Total	250	65
Age	< 21 years old	41	-
	21-30	209	3
	31-40	-	15
	41-50	-	34
	>50	-	13
	Total	250	65
Type of communication technology used	1	28	5
	2	215	60
	>2	7	0
	Total	250	65
Type of social media used	< 3	70	30
	3 – 5	110	35
	> 5	85	0
		265	65

Source: data analyzed, 2021

There was a significantly higher number of female student respondents (148) than male respondents (102), as seen in the table above. In contrast, when it comes to the professors, the female academics (36 persons) only slightly outnumbered the male ones (29).

Most students (209) were aged between 21 and 30 years old, with the remaining 41 students being younger than 21. For the professors, only three were aged 21–30, 15 were aged 31–40, 34 were aged 41–50, and 13 were aged over 50.

Most (215) students used two different types of communication technology, with 28 using one type and seven students using three or more types. Similarly, most professors (60) also used two types of communication technology, with only five of them using only one type and none using more than two. When it comes to the types of social media used by students, many (110) used 3–

5 different types of social media, while 85 of them used more than five different types of social media. Just 70 students used less than three different types of social media.

Description of data

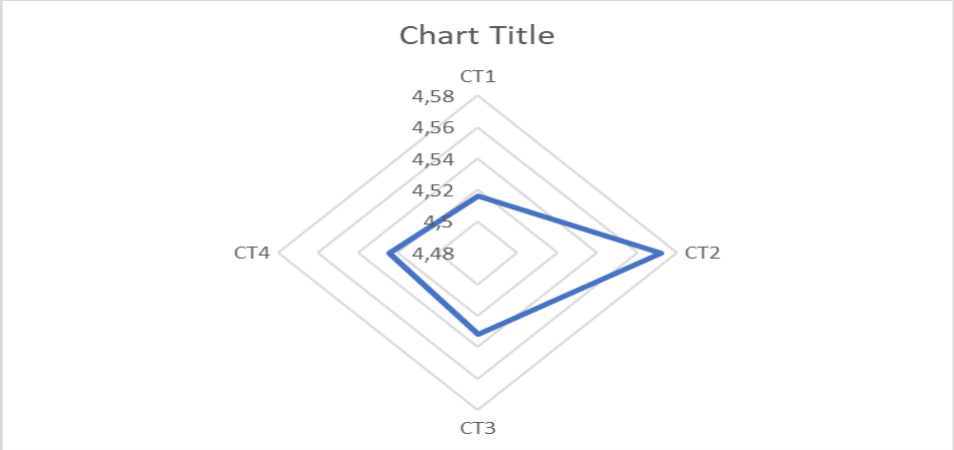

Figure 1. Average indicators of communication technology utilization

Based on the radar diagram above, it can be seen that the average use of communication technology for CT2 (communication in the form of assignments) has the highest value at 4.57, followed by CT2 (communication using smartphones), CT1 (using computer/laptop communication technology) at 4.51, and finally CT4 (communication in problem-solving related to lecture material) at 4.51.

For the variables for social media, the radar diagram is shown in Figure 2.

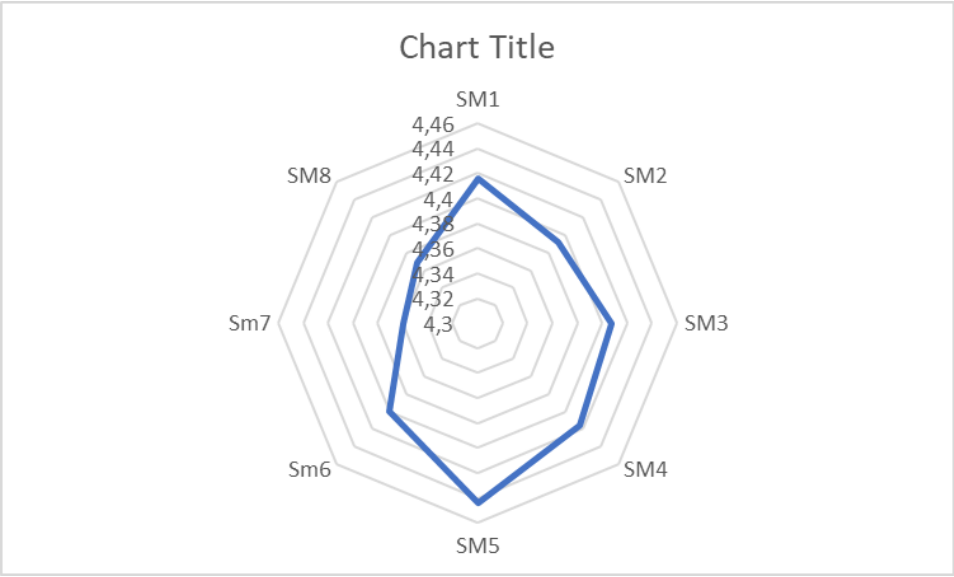

Diagram 2. *The use of social media*

Based on the radar diagram above, it can be seen that the highest average use of social media was for the SM5 indicator (doing assignments with friends) at 4.44, followed by SM1 (using fully) at 4.416 and SM4 at 4.416. The indicator with the smallest average use was SM7 (data confidentiality) at 4.36.

Table 6
Indicators of each variable and the average score

Description	**Indicators and mean**							
Indicator	TC1	TC2	TC3	TC4				
Mean	4.516	4.572	4.532	4.524				
Indicator	SM1	SM2	SM3	SM4	SM5	SM6	SM7	SM8
Mean	4.416	4.392	4.408	4.416	4.444	4.4	4.36	4.368
Indicator	TQ1	TQ2	TQ3	TQ4	TQ5	TQ6		
Mean	4.524	4.452	4.532	4.476	4.404	4.476		

Source: 2021 data analysis results

For the learning quality variable, the radar diagram is presented in Figure 3.

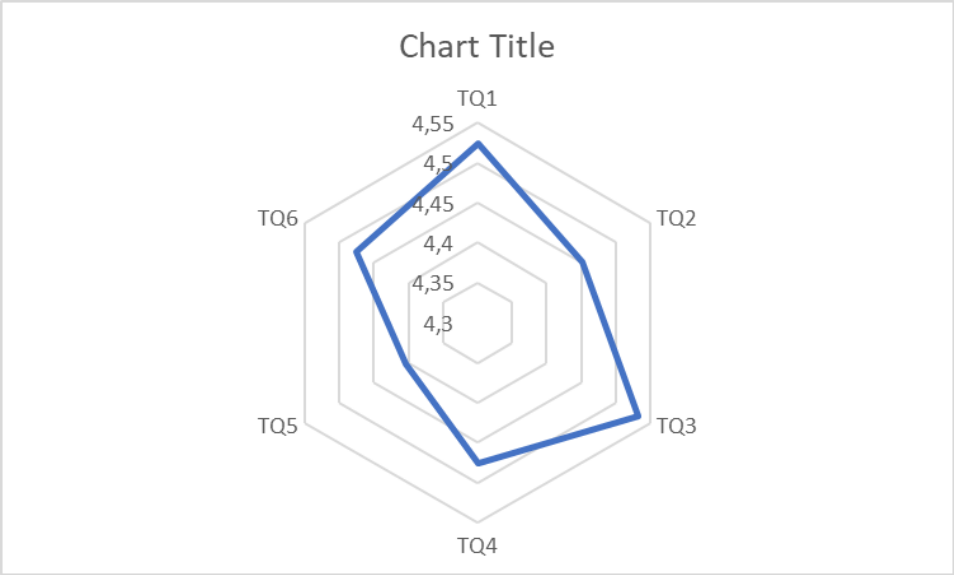

Diagram 3. *Quality of learning*

According to the above radar diagram, the indicator TQ3 (quality of the learning process) had the highest average value for quality of learning at 4.53, followed by TQ1 (socialization of learning programs) at 4.52, while the indicator with the lowest average quality of learning value was TQ5 (quality of the mid-semester exam) at 4.40.

Normality Test

The results of the data normality test are presented in Table 7.

Table 7
Normality Test

		X1	X2	Y
N		250	250	250
Normal parameters, b	Mean	36.21	35.1840	17.89
	Std. Deviation	3.944	3.65013	1,911
Most extreme differences	Absolute	.168	.204	.274
	Positive	.168	.204	.274
	negative	-.160	-.168	-.250
Kolmogorov-Smirnov Z		12.659	13,233	14,340
asymp. Sig. (2-tailed)		.065	.078	.087

a. Test distribution is normal.
b. Calculated from data.

Based on the results of the normality test, it can be seen that the variables X1, X2, and Y are all normally distributed because they all have a significance level greater than 0.05.

Linearity Test

The linearity test was performed twice, once to establish the linearity of X1 to Y and once to do the same for X2 to Y. The results are shown in Tables 8 and 9.

Table 8
Test for linearity of X1 against Y

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	246.861	1	246.861	92.479	.000b
	Residual	662.003	248	2.669		
	Total	908.864	249			

a. Dependent Variable: Y
b. Predictors: (Constant), X1

Based on the above results, the F coefficient was 92.479 with a significance of 0.000, which is lower than 0.05, so the X1 data against Y was linear.

Table 9
Test for linearity of X2 against Y

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	628.652	1	628.652	556.384	.000b
	Residual	280.212	248	1.130		
	Total	908.864	249			

a. Dependent Variable: Y
b. Predictors: (Constant), X2

Based on the results shown in Table 8, the F coefficient was 556.384 with a significance of 0.000, which is lower than 0.05, so the X2 data against Y was linear.

Homogeneity Test

Table 10
Homogeneity test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52985.216	2	26492.608	2443.333	.063
Within Groups	8099.584	747	10.843		
Total	61084.800	749			

Based on the results for the homogeneity test shown in Table 10, the F coefficient was 2443.333 with a significance of 0.063, which is greater than 0.000, so there was no difference in homogeneity between variables, meaning that the data were homogeneous.

Hypotheses Testing

Based on the results of the data analysis, as well as several theories that have been put forward by experts, the results of this study were used to test a number of hypotheses.

First Statistical Hypothesis

H_{01} :1 = 0 : The use of communication technology has no influence on the quality of learning for Islamic college students in Parepare.

Ha_{1} : $\gamma_1 \neq 0$: The use of communication technology influences the quality of learning for Islamic college students in Parepare.

The findings of the inner model (structural model) test—which comprises the r-square output, parameter coefficients, and t-statistics—were used to test the above hypothesis. Paying attention to these significant values can help determine whether or not to accept or reject a hypothesis. The SmartPLS (Partial Least Square) 3.0 software was used to conduct hypothesis testing in this study. The bootstrapping results revealed a t-statistic greater than 1.96 with a p-value of 0.05 (5%) and a positive beta coefficient should be used as a guideline in this investigation. Table 5 shows the importance of evaluating this research hypothesis, while Figure 4 below shows how the outcomes of this research model can be described.

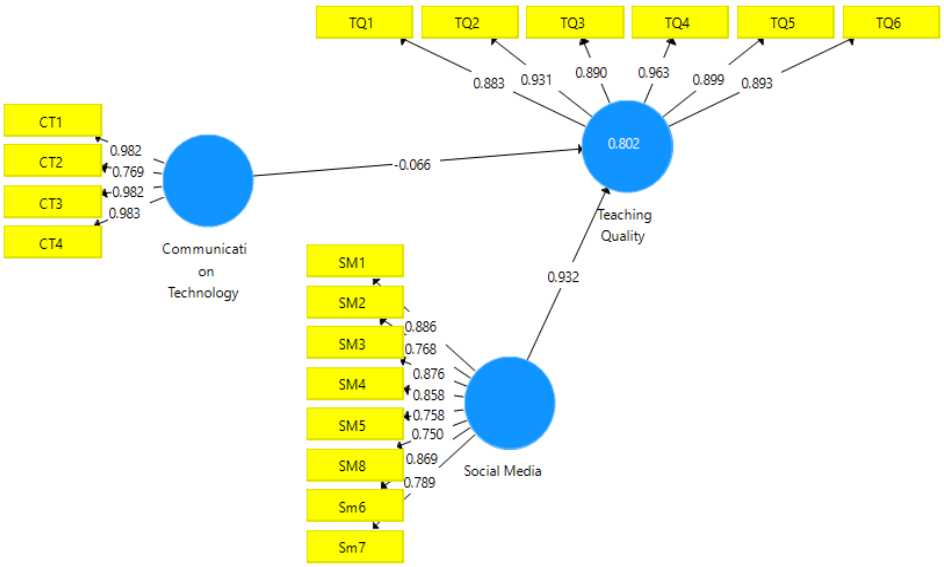

Figure 4. Hypothesis test analysis results

Based on the results of the hypothesis testing, the path coefficient was 0.066 with an R of 0.821 and an R2 of 0.674. The results of the complete analysis can be seen in Table 11.

Table 11
Calculation results for R2, t-test, and p value

Effect	R	Original Sample (O)/R2	Sample Mean (M)	Standard Deviation (STDEV)	t-Statistic (|O/STDEV|)	p value
X1→Y	0.821	0.674	0.346	0.062	3.850	0.000
X2→Y	0.894	0.799	0.346	0.062	3.850	0.000
X1,X2→Y	0.899	0.800	0.346	0.062	3.850	0.000

The hypothesis test revealed that the R Square (R2) was 0.674 with a t-statistic of 3.850 (> 1.96) (p-value=0.000 < 0.05). As a result, the null hypothesis was rejected and H_{a1} was accepted. The usage of communication technology apparently does have an impact on the quality of learning for Islamic college students in Parepare, thus supporting what has been found in previous research. When the coefficient of determination was calculated, the R Square value was 0.674, so the use of communication technology is responsible for 67.4% of the variation in quality of learning, which is a significant proportion. The remaining 32.6% is due to other factors that are not accounted for in this study, although they are likely significant nonetheless.

Second Hypothesis Test

H_{02} : $\gamma_2 = 0$: The use of social media does not influence the quality of learning for Islamic college students in Parepare.

H_{a2} : $\gamma_2 \neq 0$: The use of social media influences the quality of learning for Islamic college students in Parepare.

The route coefficient was 0.932, the R was 0.894, the R Square (R2) was 0.799, the t-statistics was 3.850 (> 1.96), and the p-value was 0.000 (< 0.05), so the null hypothesis was rejected and H_{a2} was accepted based on these results. The use of social media by Islamic college students indeed has a notable impact on academic performance, because the R2 of 0.799 indicates that 79% of the variation in learning quality is determined by a person's capacity for using social media. The remaining 20.1% is due to other issues outside the scope of this investigation.

Third Hypothesis Test

H_{03} : $\gamma_3 = 0$: The simultaneous use of communication technology and social media does not influence the quality of learning for Islamic college students in Parepare.

H_{a3} : $\gamma_3 \neq 0$: The simultaneous use of communication technology and social media does influence the quality of learning for Islamic college students in Parepare.

0.802	0.800

The hypothesis testing results indicated that the null hypothesis should be rejected, so H_{a3} was accepted. Therefore, according to this study, Islamic college students in Parepare can benefit greatly from simultaneously using both communication technologies and social media.

Based on the R2 value of 0.800, we can surmise that 80% of the variation in learning quality is due to an individual's ability to employ communication technology and social media at the same time. However, even though the remaining 20% is due to factors outside the scope of this study, they may still be important. Such factors could include, for example, learning techniques, average student aptitude, learning motivation, classroom atmosphere, educational culture, and the professionalism of the instructor. The recent finding reveals that social media (i.e., the X2 variable) has a greater impact than communication technology (i.e., the X1 variable). Thus, any educators

looking to improve the quality of learning should focus on using social media first and reinforce it with communication technology.

Discussion

This study's findings indicate that a suitable use of communication technology can increase the quality of the learning process and improve the learning experience. However, when the communication facilities of a campus are inadequate, the quality of learning may suffer as a result of poor infrastructure. Consequently, all colleges should provide suitable communication infrastructure, such as internet access and wireless networks, because substandard technology will not support student learning, instead weakening students' interest and enthusiasm in learning.

In contrast, students' motivation to learn will increase thanks to a well-designed communication network that is supported by appropriate technology. Should network connectivity go down when students are studying, their concentration will be broken, and their excitement for learning will be reduced as a result of the interruption.

A study by Manca (2020) found that students who used social and digital media were more motivated to attend classes. Assigning and collecting tasks, as well as other learning activities, through social media also proved to be quite beneficial. Indeed, students and lecturers alike can benefit from using social media in the classroom, thus creating a sense of uniformity (Manca, 2020). Using social media to collaborate on group projects and discuss assignments also seems to be a great idea.

It is possible to create cooperative spaces with social media, such as social networks, for students to communicate with professors and other students. Students' abilities to compose texts, research subjects, present viewpoints, and engage in debates can all be improved by leveraging social media platforms. When working on academic tasks, social media can also be used to facilitate dialogue. In addition, social media can be effective for research, because it encourages students to be creative while also making it easier to access relevant materials and engage in various activities to learn more about a subject. Social media can also be a powerful instrument for spreading the required culture of technology, thus allowing students' creative powers to be awakened and unleashed.

Student's comprehension of lecture material can also be improved through the use of social communication techniques, as identified in a study by Sahar & Ahmad (2019). Furthermore, participatory digital culture can bridge formal and informal learning gaps according to (Greenhow

& Robelia, 2009). In addition, McKinney & Rill (2009) examined students' opinions and discussions in depth and found that students could use YouTube to spark debates, thus representing an effective teaching tool. Adolescents' use of social networking sites for intimacy, privacy, and self-expression was also examined by Livingstone (2008).

When it comes to the use of social media by students and teachers, (Akyuz et al., 2012) sought to find out what kinds of social and educational activities they engaged in on these networks. The findings indicated that compared to other forms of communication technology, the use of social media can increase the overall quality of the learning experience. Thus, when a campus wishes to increase the quality of learning for its students, it should provide adequate network infrastructure, so students can communicate through social media to support their learning from lectures and other activities. Thereby, this research finds a novelty in the research methods in that the use of social media can increase teaching values, communication and interaction providing networking sites for intimacy, privacy, and self-expression.

Conclusion

This study found a strong correlation between the use of communication technologies and the quality of learning for students. Indeed, students become more engaged in the learning process when using suitable communication technologies. In addition, the quality of learning can be considerably improved by the use of social media by both professors and students. Indeed, students and professors alike can benefit from greater use of social media in the classroom, because it helps break down the barriers between the two groups and allows students and lecturers to spend more time communicating (i.e., outside of class hours). What is more, when communication technology and social media are used simultaneously, it improves the quality of learning further, because the combined impact of these two technologies is more significant than when using either of them in isolation. However, when looking at these technologies individually, social media appears to be more effective than communication technology for improving the quality of learning. Nevertheless, they should be deployed in tandem whenever possible, heir learning from lectures and other activities. This research emphasizes its novelty in that networking sites for intimacy, privacy, and self-expression can increase teaching values, communication and interaction. This study, however has its limitation on the number of sample to generate the results. Conclusion of this study should be defined in caution. In addition, future studies could also investigate the

influence of these technologies at the postgraduate level, as well as for vocational and non-vocational tertiary institutions.

References

Ajjan, H., & Hartshorne, R. (2008). Investigating faculty decisions to adopt Web 2.0 technologies: Theory and empirical tests. *Internet and Higher Education*, *11*(2), 71–80. https://doi.org/10.1016/j.iheduc.2008.05.002

Akyuz, H. I., Yetik, S. S., Bardakci, S., Alakurt, T., Numanoglu, G., & Keser, H. (2012). Teacher Candidates' Social Network Usage Tendencies: A Qualitative Investigation. *Procedia - Social and Behavioral Sciences*, *46*, 5402–5408. https://doi.org/10.1016/j.sbspro.2012.06.447

Al-Daihani, S. M., Al-Qallaf, J. S., & AlSaheeb, S. A. (2018). Use of social media by social science academics for scholarly communication. *Global Knowledge, Memory and Communication*, *67*(6–7), 412–424. https://doi.org/10.1108/GKMC-11-2017-0091

Al-Rahmi, W. M., Othman, M. S., Yusof, L. M., & Musa, M. A. (2015). Using social media as a tool for improving academic performance through collaborative learning in Malaysian higher education. *Review of European Studies*, *7*(3), 265–275. https://doi.org/10.5539/res.v7n3p265

Aldahdouh, T. Z., Korhonen, V., & Nokelainen, P. (2017). *How Does an Organisation's Culture Relate to Professional Growth? 19*, 9–30. https://journal.fi/akakk/article/view/84806

Alexander, B., Ashford-Rowe, K., Barajas-Murphy, N., Dobbin, G., Knott, J., McCormack, M., Pomerantz, J., Seilhamer, R., & Weber, N. (2019). *Educause Horizon report: 2019 Higher Education edition.* EDUCAUSE. https://www.educause.edu/horizonreport

Alharthi, A., Yahya, F., Walters, R. J., & Wills, G. B. (2015). An overview of cloud services adoption challenges in higher education institutions. *Proceedings of ESaaSA 2015 - 2nd International Workshop on Emerging Software as a Service and Analytics, In Conjuction with the 5th International Conference on Cloud Computing and Services Science - CLOSER 2015*, 102–109. https://doi.org/10.5220/0005529701020109

Alhumaid, K. F. (2020). Qualitative evaluation: Effectiveness of utilizing digital and social media in education. *Utopia y Praxis Latinoamericana*, *25*(Extra 6), 466–476. https://doi.org/10.5281/zenodo.3987663

Amin, N. A. H. N., Hasnan, A. S., Besar, N. N., & Almunawar, M. N. (2019). Knowledge Sharing Using Web 2.0: Preferences, Benefits and Barriers in Brunei Darussalam's Tertiary Education. *Information Diffusion Management and Knowledge Sharing*, *1*(June), 623–641. https://doi.org/10.4018/978-1-7998-0417-8.ch030

Arts, J. W. C., Frambach, R. T., & Bijmolt, T. H. A. (2011). Generalizations on consumer innovation adoption: A meta-analysis on drivers of intention and behavior. *International Journal of Research in Marketing*, *28*(2), 134–144. https://doi.org/10.1016/j.ijresmar.2010.11.002

Bartels, J., & Reinders, M. J. (2011). Consumer innovativeness and its correlates: A propositional inventory for future research. *Journal of Business Research*, *64*(6), 601–609. https://doi.org/10.1016/j.jbusres.2010.05.002

Baytak, A., Tarman, B., & Ayas, C. (2011). Experiencing technology integration in education: Children's perceptions. *International Electronic Journal of Elementary Education, 3*(2), 139-151.

Bishara, A. J., & Hittner, J. B. (2012). Testing the significance of a correlation with nonnormal data: Comparison of Pearson, Spearman, transformation, and resampling approaches. *Psychological Methods*, *17*(3), 399–417. https://doi.org/10.1037/a0028087

Brown, S. A. (2012). Seeing Web 2.0 in context: A study of Academic Perceptions. *Internet and Higher Education*, *15*(1), 50–57. https://doi.org/10.1016/j.iheduc.2011.04.003

Budiharso, T., & Tarman, B. (2020). Improving Quality Education through Better Working Conditions of Academic Institutes. *Journal of Ethnic and Cultural Studies*, *7*(1), 99–115. https://doi.org/10.29333/ejecs/306

Cetinkaya, L. (2017). The impact of whatsapp use on success in education process. *International Review of Research in Open and Distance Learning*, *18*(7), 59–74. https://doi.org/10.19173/irrodl.v18i7.3279

Christensen, L. B., & Waraczynski, M. A. (1988). *Experimental methodology*. Boston: Allyn and Bacon.

Chugh, R., & Ruhi, U. (2018). Social media in higher education: A literature review of Facebook. *Education and Information Technologies*, *23*(2), 605–616. https://doi.org/10.1007/s10639-017-9621-2

Corcoran, N., & Duane, A. (2018). Using social media to enable staff knowledge sharing in higher education institutions. *Australasian Journal of Information Systems*, *22*(2015), 1–26. https://doi.org/10.3127/ajis.v22i0.1647

DeSchryver, M., Mishra, P., Koehleer, M., & Francis, A. (2009, March). Moodle vs. Facebook: Does using Facebook for discussions in an online course enhance perceived social presence and student interaction?. In *Society for information technology & teacher education international conference* (pp. 329-336). Association for the Advancement of Computing in Education (AACE).

Divall, M. V., & Kirwin, J. L. (2012). Using facebook to facilitate course-related discussion

between students and faculty members. *American Journal of Pharmaceutical Education*, *76*(2), 1–5. https://doi.org/10.5688/ajpe76232

Dumpit, D. Z., & Fernandez, C. J. (2017). Analysis of the use of social media in Higher Education Institutions (HEIs) using the Technology Acceptance Model. *International Journal of Educational Technology in Higher Education*, *14*(1). https://doi.org/10.1186/s41239-017-0045-2

Dyson, B., Vickers, K., Turtle, J., Cowan, S., & Tassone, A. (2015). Evaluating the use of Facebook to increase student engagement and understanding in lecture-based classes. *Higher Education*, *69*(2), 303–313. https://doi.org/10.1007/s10734-014-9776-3

Ellison, E. (2017). The #AustralianBeachspace Project: Examining Opportunities for Research Dissemination Using Instagram. *M/C Journal*, *20*(4). https://doi.org/10.5204/mcj.1251

Eynon, R., & Malmberg, L. E. (2011). A typology of young people's Internet use: Implications for education. *Computers and Education*, *56*(3), 585–595. https://doi.org/10.1016/j.compedu.2010.09.020

Goldsmith, R. E., Freiden, J. B., & Eastman, J. K. (1995). The generality/specificity issue in consumer innovativeness research. *Technovation*, *15*(10), 601–612. https://doi.org/10.1016/0166-4972(95)99328-D

Green, T. (2016). A methodological review of structural equation modelling in higher education research. *Studies in Higher Education*, *41*(12), 2125–2155. https://doi.org/10.1080/03075079.2015.1021670

Greenhow, C., & Robelia, B. (2009). Old communication, new literacies: Social network sites as social learning resources. *Journal of Computer-Mediated Communication*, *14*(4), 1130–1161. https://doi.org/10.1111/j.1083-6101.2009.01484.x

Gruzd, A., Staves, K., & Wilk, A. (2012). Connected scholars: Examining the role of social media in research practices of faculty using the UTAUT model. *Computers in Human Behavior*, *28*(6), 2340–2350. https://doi.org/10.1016/j.chb.2012.07.004

Gu, F., & Widén-Wulff, G. (2011). Scholarly communication and possible changes in the context of social media: A Finnish case study. *Electronic Library*, *29*(6), 762–776. https://doi.org/10.1108/02640471111187999

Gunn, V., & Fisk, A. (2013). Considering Teaching Excellence in Higher Education: 2007-2013: A Literature Review Since the CHERI Report 2007. *Higher Education Academy*, *February*, 2007–2013. http://eprints.gla.ac.uk/87987/

Hamid, S., Waycott, J., Kurnia, S., & Chang, S. (2015). Understanding students' perceptions of the benefits of online social networking use for teaching and learning. *Internet and Higher Education*, *26*, 1–9. https://doi.org/10.1016/j.iheduc.2015.02.004

Handayani, F. (2016). Instagram as a Teaching Tool? Really? *Proceedings of the Fourth International Seminar on English Language and Teaching (ISELT-4)*, *4*(1), 320–327. http://ejournal.unp.ac.id/index.php/selt/article/view/6942

Hung, H. T., & Yuen, S. C. Y. (2010). Educational use of social networking technology in higher education. *Teaching in Higher Education*, *15*(6), 703–714. https://doi.org/10.1080/13562517.2010.507307

Ito, M., Baumer, S., Bittanti, M., Boyd, D., Cody, R., Herr Stephenson, B., Horst, H. A., Lange, P. G., Mahendran, D., Martínez, K. Z., Pascoe, C. J., Perkel, D., Robinson, L., Sims, C., & Tripp, L. (2018). Hanging Out, Messing Around, and Geeking Out. In *Hanging Out, Messing Around, and Geeking Out*. The MIT Press. https://doi.org/10.7551/mitpress/8402.001.0001

Jin, C. H. (2013). The effects of individual innovativeness on users' adoption of Internet content filtering software and attitudes toward children's Internet use. *Computers in Human Behavior*, *29*(5), 1904–1916. https://doi.org/10.1016/j.chb.2013.03.009

Kenna, J. L., & Hensley, M. A. (2019). Utilizing Social Media to Promote Civic Engagement in the Social Studies Classroom. *The Social Studies*, *110*(2), 86–94. https://doi.org/10.1080/00377996.2018.1524360

Khan, N., & Ali, A. (2010). *Improving the speaking ability in English : The students ' perspective*. *2*(2), 3575–3579. https://doi.org/10.1016/j.sbspro.2010.03.554

Koltay, T., Špiranec, S., & Karvalics, L. Z. (2015). The Shift of Information Literacy Towards Research 2.0. *Journal of Academic Librarianship*, *41*(1), 87–93. https://doi.org/10.1016/j.acalib.2014.11.001

Lim, N., Grönlund, Å., & Andersson, A. (2015). Cloud Computing: The beliefs and perceptions of Swedish school principals. *Computers and Education*, *84*, 90–100. https://doi.org/10.1016/j.compedu.2015.01.009

Linting, M., & Van Der Kooij, A. (2012). Nonlinear principal components analysis with CATPCA: A tutorial. *Journal of Personality Assessment*, *94*(1), 12–25. https://doi.org/10.1080/00223891.2011.627965

Livingstone, S. (2008). Taking risky opportunities in youthful content creation: Teenagers' use of social networking sites for intimacy, privacy and self-expression. *New Media and Society*, *10*(3), 393–411. https://doi.org/10.1177/1461444808089415

Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management and Data Systems*, *111*(7), 1006–1023. https://doi.org/10.1108/02635571111161262

Lupton, D. (2014). 'Feeling Better Connected': Academics' Use of Social Media. *News & Media*

Research Centre, June, 36. http://www.canberra.edu.au/research/faculty-research-centres/nmrc/publications/documents/Feeling-Better-Connected-report-final.pdf

Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: "It is more for socialising and talking to friends about work than for actually doing work." *Learning, Media and Technology, 34*(2), 141–155. https://doi.org/10.1080/17439880902923606

Manca, S. (2020). Snapping, pinning, liking or texting: Investigating social media in higher education beyond Facebook. *Internet and Higher Education*, *44*, 100707. https://doi.org/10.1016/j.iheduc.2019.100707

McKinney, M. S., & Rill, L. A. (2009). Not your parents' presidential debates: Examining the effects of the CNN/YouTube debates on young citizens' civic engagement. *Communication Studies*, *60*(4), 392–406. https://doi.org/10.1080/10510970903110001

Mell, P., & Grance, T. (2011). The NIST-National Institute of Standars and Technology-Definition of Cloud Computing. *NIST Special Publication 800-145*, 7.

Menzies, H., & Newson, J. (2007). No Time to Think: Academics' life in the globally wired university. *Time & Society*, *16*(1), 83–98. https://doi.org/10.1177/0961463X07074103

Mills, N. (2011). Situated learning through social networking communities: The development of joint enterprise, mutual engagement, and a shared repertoire. *CALICO Journal*, *28*(2), 345–368. https://doi.org/10.11139/cj.28.2.345-368

Mohajan, H. (2018). Munich Personal RePEc Archive Qualitative Research Methodology in Social Sciences and Related Subjects Qualitative Research Methodology in Social Sciences and Related Subjects. *Journal of Economic Development, Environment and People*, *7*(85654), 23–48. https://www.ceeol.com/search/article-detail?id=640546

Moran, M., Seaman, J., & Tinti-Kane, H. (2011). *Teaching, Learning, and Sharing: How Today's Higher Education Faculty Use Social Media*. *April*. www.pearsonlearningsolutions.com

Nur'Aini, S. (2021). University Students' Learning Disruption and Affordance in a Contested Learning Environment. *Research in Social Sciences and Technology*, *6*(3), 25–44. https://doi.org/10.46303/ressat.2021.23

Putri, K. Y. S., Fathurahman, H., Safitri, D., & Sugiyanta, L. (2019). The Use the Elaboration phase in ICT and Social Studies to Educate Junior High School Students about the Covid 19 Pandemic *Journal of Social Studies Education Research*, *10*(3), 364–386. https://jsser.org/index.php/jsser/article/view/3043

Rahmadi, I., Hayati, E., & Nursyifa, A. (2020). Comparing Pre-service Civic Education Teachers' TPACK Confidence Across Course Modes. *Research in Social Sciences and Technology, 5*(2), 113-133. https://doi.org/10.46303/ressat.05.02.7

Riadi, E. (2016). *Statistika Penelitian (Analisis Manual dan IBM SPSS)*. Yogyakarta: CV. Andi Offset.

Roehrich, G. (2004). Consumer innovativeness-Concepts and measurements. *Journal of Business Research*, *57*(6), 671–677. https://doi.org/10.1016/S0148-2963(02)00311-9

Sahar, & Ahmad, I. (2019). Waste management analysis from economic-environment sustainability perspective. *International Journal of Scientific and Technology Research*, *8*(12), 1540–1543.

Solikhah, I., & Budiharso, T. (2020). Exploring cultural inclusion in the curriculum and practices for teaching bahasa indonesia to speakers of other languages. *Journal of Social Studies Education Research*, *11*(3), 177–197. https://jsser.org/index.php/jsser/article/view/2658

Uusiautti, S., & Määttä, K. (2014). I am no longer alone - How do university students perceive the possibilities of social media? *International Journal of Adolescence and Youth*, *19*(3), 293–305. https://doi.org/10.1080/02673843.2014.919600

Valenzuela, S., Park, N., & Kee, K. F. (2009). Is There social capital in a social network site?: Facebook use and college student's life satisfaction, trust, and participation1. *Journal of Computer-Mediated Communication*, *14*(4), 875–901. https://doi.org/10.1111/j.1083-6101.2009.01474.x

Van-Rijnsoever, F. J., & Donders, A. R. T. (2013). The Effect of Innovativeness on Different Levels of Technology Adoption. *Journal of the American Society for Information Science and Technology*, *64*(July), 1852–1863. https://doi.org/10.1002/asi

Veletsianos, G., & Kimmons, R. (2013). Scholars and faculty members' lived experiences in online social networks. *Internet and Higher Education*, *16*(1), 43–50. https://doi.org/10.1016/j.iheduc.2012.01.004

Watson, E. (2020). #Education: The Potential Impact of Social Media and Hashtag Ideology on the Classroom. *Research in Social Sciences and Technology*, *5*(2), 40-56. https://doi.org/10.46303/ressat.05.02.3

White, C. (2020). Wielding Social Media in the Cyber-Arena: Globalism, Nationalism, and Civic Education. *Research in Social Sciences and Technology, 5*(1), 1-21. https://doi.org/10.46303/ressat.05.01.1