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by Meily Margaretha, Susanti Saragih, Ana Mariana, Kristin Monica
Simatupang

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**Academic procrastination and cyberloafing behavior: A case study
of students in Indonesia**

Meily Margaretha ^{a*}, Universitas Kristen Maranatha, Bandung, Indonesia. <https://orcid.org/0000-0001-8617-1924>

Susanti Saragih ^b, Universitas Kristen Maranatha, Bandung, Indonesia. <https://orcid.org/0000-0002-5337-356X>

Ana Mariana ^c, Universitas Kristen Maranatha, Bandung, Indonesia. <https://orcid.org/0000-0002-3754-8374>

Kristin Monica Simatupang ^d, Universitas Kristen Maranatha, Bandung, Indonesia. <https://orcid.org/0000-0002-6128-5711>

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Abstract

Internet is a tool widely used by students to advance online and offline learning, especially during the Coronavirus disease-19 (COVID-19) pandemic. However, overdependence on internet use in the learning process may negatively affect the academic progress of students. Some students delay submitting academic assignments without tangible reasons. Students often use the internet for activities unrelated to academics. This study aimed to investigate the relationship between cyberloafing behavior and academic procrastination of Indonesian students during Covid-19 pandemic. The effect of self-regulated learning in explaining the relationship between cyberloafing behavior and academic procrastination was also discussed. This study used a descriptive study. The data collection technique was the survey method with the help of questionnaires. Sample size for this research was 732 students drawn from both the state and private universities in Indonesia. The results of the study showed that cyberloafing significantly affects students' academic procrastination. Moreover, the relationship between these two variables was moderated by self-regulated learning. This research is expected to provide input to all parties involved in the student learning process and help develop information technology integration in the learning process.

Keywords: academic, internet, cyberloafing, procrastination, regulation, technology

* ADDRESS OF CORRESPONDENCE: Meily Margaretha, Universitas Kristen Maranatha, Bandung, Indonesia.

Email address: meily_margaretha@yahoo.com / meily.margaretha@eco.maranatha.edu

1. Introduction

Technology has ushered in structural changes that significantly enhance productivity. The Covid 19 pandemic has shown the need to embrace technological tools to complete work, learn, educate, and do online things. For instance, technological integration into the current curriculum has made it easy for both teachers and learners to use online learning.

Notably, technology advancement and internet availability to universities have enabled students to access the coursework content posted online by tutors. They can also easily access additional learning materials to increase their course content mastery (Lee & Tsai, 2011, Wu et al., 2018). According to Gokler and Turan (2020) the number of young people use technology such media social and internet has increased drastically in this period of pandemic.

Meanwhile, many educators complained about the decline in students' achievement in academic performance, students spend more time on internet than studying that makes them fail to attend classes (Gokler & Turan, 2020). Students are susceptible to abusing technology, especially the use of the internet. According to Akbulut et al. (2016); Ugrin & Pearson (2013); Varol & Yildirim (2018), and Yilmaz et al. (2015), many students may spend substantial time on social media, visiting pornographic sites, online games, and do online businesses at the expense of learning because of internet availability.

The use of the internet in universities not related to lectures is called cyberloafing behavior. This concept is evaluates employees behavior of using internet services provided at workplaces for personal interest on the assigned duties (Lim, 2002). According to Yilmaz et al. (2015), the concept applies in education where students utilize the internet services for their personal gains instead of advancing their academic knowledge.

Students poor habit of accessing their various social media accounts during teaching hours, leads to a lapse in concentration on the learning material presented by the teacher (Junco & Cotten, 2012; Ravizza et al., 2014, Yaşar & Yurdugül, 2013). McCoy (2016) stated that most students mostly use mobile phones and laptops to access social media platforms while in class. Bellur et al. (2015) and Wu et al. (2018) established cyberloafing impairs students' learning process, hence requiring urgent attention.

Previous researchers have stated several reasons why students perform cyberloafing. One reason that may cause this behavior in students is that they have more free time to engage in other activities outside learning. Ergün and Altun (2012), Varol and Yildirim (2018), and Aguilar-Roca et al. (2012) stated that students engage in this behavior due to the ineffectiveness of the lecturer to deliver course content, individual indiscipline, and uncondusive classroom environment.

Furthermore, Kalaycı (as cited Yaşar and Yurdugül, 2013), Arabacı (2017), Varol and Yildirim (2018), and Yılmaz and Yurdugül (2018) stated that demographic factors including learning motivation, lack of self-control, -confidence, and -regulation cause cyberloafing behavior in college students. Moreover, Alt (2017) observed that an educator with effective learning methods attracts the students' attention, and ultimately this makes focused on the content delivered by the lecturer. However, when students feel that materials do not match their needs or are challenging, they switch off to cyberloafing.

Students have a hive of activities on campus, including individual and group assignments and playing some part in the learning process. According to Solomon and Rothblum (as cited in Anggunani & Purwanto, 2018), the number of tasks with various unpredictable outcomes makes students reluctant to work on assignments due to irrational beliefs regarding their abilities and the fear of failure. According to McCloskey (2011), the tendency to put aside or delay activities and behaviors related to academic tasks is often referred to as academic procrastination. The research by Negara (2013) on undergraduate and graduate students in a state University in Indonesia stated that most undergraduate and graduate program subjects were at moderate academic procrastination levels of 25.6% and 33.3%, respectively.

Academic procrastination is attributed to the failure of individual self-regulation, such as disturbed focus, poor organization, low achievement motivation, and the gap between planning and reality. Procrastinators cannot manage distractions to focus on pertinent issues such as classwork. Having low ambitions makes procrastinators fail to carry out plans prepared previously, and this causes a gap between the plan and execution (Steel, 2007). Steel and Klingsieck (2015) stated that these people lack time management strategies in particular and are easily distracted by attractive opportunities that come their way.

Academic procrastination can adversely affect student achievement and subjective well-being, such as producing stress and regret. Knaus (2010) stated that academic procrastination is a result of individuals avoiding tensions related to academics. Someone who does not like carrying out a given task tends to ignore it or put it aside by delaying working on it or accomplishing it. This is a procrastination behavior caused by the perspective of individuals regarding their abilities. The University of Illinois Counseling Center in 1996 (as cited in Santrock, 2008) found that procrastination has several forms, including spending hours on the computer and surfing the internet.

Ferrari et al. (1995) indicated that procrastinators look for ways to relieve themselves from the anxiety caused by reluctance to perform a given task or fear of failure. Therefore, they find some forms of entertainment, such as browsing through the internet to suppress their tension and anxiety. This is in line with Lavoie and Pychyl (2001), which stated that the internet is considered entertainment and positively related to relieving a person's sense of stress. Davis (2001) stated that unconstructive internet use, such as staying long on social media, results in task delays. Diomidious et al. (2016) observed that excessive internet use could worsen relationships with friends and family, lack of interest in life, neglect of household needs, academic failure, and professional tasks.

Moreover, study of Tezer et al. (2020) with a sample of high school students found that academic procrastination behaviors increase in this pandemic period because students always stay connected to the internet, and this behavior related to their grade point averages (GPAs) and problematic internet usage levels. According to O'Sullivan (2020) academic procrastination is seen as a big problem and need to be solved by much research.

1.1. Conceptual or Theoretical Framework

According to Blanchard and Herle (2008), cyberloafing involves using the internet to access materials and email unrelated to designated work by employees of an organization. Lim (2002) noted that employees use office internet for other purposes unrelated to office work. Cyberloafing has been conceptualized as a form of work deviance (Blanchard & Herle, 2008; Lim, 2002). Experts' defined cyberloafing as the act of intentionally using internet access meant for related activities for personal interest, thereby threatening the predetermined objectives of the organization.

Prasad et al. (2010) stated that this behavior distracts the learning process due to mind diversion to activities such as reading personal emails, holding online dialogues, doing online shopping, reading sports magazines, seeing adult websites, engaging in online banking activities, playing online games, and checking social media accounts (Blanchard & Herle, 2008; Vitak et al., 2011; Flanigan & Kiewra, 2017).

According to Blanchard & Henle (2008), cyberloafing is separated into minor and serious forms. Some minor forms of cyberloafing are browsing, online shopping, as well as receiving or sending emails in class. Others include managing personal websites, visiting adult websites, blogging, communicating with strangers through personal chats, gambling online, and downloading songs.

Many students divert attention in classes by playing on cellphones, laptops, ipads, tabs, and other gadgets. According to Akbulut et al. (2016), cyberloafing in lectures is described by various aspects, including 1) sharing, specifically checking posts, commenting on posts, checking videos shared on social media, and having conversations with other people, 2) shopping, which includes internet activities related to online shopping, such as visiting online shopping and banking sites, 3) real-time updating,

specifically using social media access to share the latest conditions (updates) and provide comments on things currently discussed (trending topics), 4) accessing online content, namely activities to access the internet related to music, videos, applications found on online sites, and 5) gaming/gambling.

Prasad et al. (2010) stated that individuals' ability to possess self-control is an essential aspect of self-regulation. Prasad stated that individuals would stay concentrating on their long-term plans if they could set aside short-term goals through self-control traits. This trait is crucial since it affects how people control themselves, especially concerning internet use activities inside and outside the learning process in the classroom.

Zimmerman and Schunk (2011) defined self-regulated learning (SRL) as an individual capability to achieve personal goals through cognition, affection, and behavior. SRL is analogous to learning situations because by having clear learning goals, one would strive to achieve them no matter how unsupportive the environment would be. According to Dunbar et al. (2018), individuals with high SRL have the motivation to achieve their learning goals.

Therefore, their internet use would be directed towards finding appropriate material for the success of their learning endeavors. In this case, students with SRL control themselves against the strong desire to utilize the internet external activities (Gaudreau et al., 2014; Wu, 2015). It can be concluded that when accessing the internet, students with high self-regulation show stronger control than those with low SRL. Academic procrastination cannot be separated from individual self-regulation failures such as disturbed focus, poor management, low achievement motivation, and the gap between plan and reality (Anggunani & Purwanto, 2018).

1.2. Related Research

The internet has become a crucial resource used in educational environments' teaching and learning process (Odaci, 2011). With the help of the internet, students access materials needed in lectures and get information in different ways regarding their coursework easily. However, advancement in information technology and internet use has created many problems in equal measure, especially when used inappropriately. Odaci (2011) stated that students are categorized as a group that can use the internet. The internet is expected to provide many benefits to support academic activities, though it is often abused. For instance, students are expected to carry out online research and write down the answers when given assignments. Instead, many spend much of their time engaging in unhelpful activities online, which leads to delays in submitting assignments. This delay is called "academic procrastination," evident in the unpreparedness to take exams and collect assignments requested by lecturers.

Burka and Lenora (2008) estimated a 75% increase in procrastination behavior by students in 2007. Out of these, 50% of students interviewed felt this behavior was a challenge that needed attention. El Din and Baddar (2019) examined nurses at Damanhour National Medical Institute, Egypt, and Lovie and Pychyl (2001), who investigated the 308 respondents in North America and established cyberloafing behavior correlates with procrastination. Therefore, the first hypothesis proposed is cyberloafing affects students' academic procrastination.

Several studies discovered a relationship between cyberloafing behavior and self-regulation (Prasad et al., 2010; Widiastuti & Margaretha, 2016). However, Gökçearsan et al. (2016) and Wu (2017) show an insignificant relationship between cyberloafing and SRL. Therefore, there are still inconsistencies in the relationship between the two variables. Self-regulated learning is thought to reduce cyberloafing behavior; hence academic procrastination is expected to reduce significantly, paving the way for improved academic performance. According to Zhang (2015) and Gökçearsan et al. (2016), SRL can determine a student's involvement in cyberloafing. Students skilled in regulating themselves are expected to reach higher learning goals, concentrate on lecture material, and find solutions to distractions, including engaging in cyberloafing. Therefore, the second proposed hypothesis is self-regulated learning, which moderates the effect of cyberloafing behavior and academic procrastination on students.

1.3. Purpose of the Study

This research aims to examine factors responsible for curbing cyberloafing in students. This includes self-regulated learning (SRL), which is thought to reduce cyberloafing behavior and academic procrastination, improving academic performance. Students who regulate themselves tend to easily reach their learning objectives, by concentrating on their materials, and solve academic related challenges such as distractions, and cyberloafing (Zhang, 2015; Gökçearsan et al., 2016). Furthermore, the research aimed to determine whether cyberloafing behavior affects academic procrastination and how the role of self-regulation moderates the relationship between the two variables. Since cyberloafing has been intensively examined in the western countries, including America and Canada, as opposed to the Asian region (Wu et al., 2018), the results can be used to compare the relationship regarding cyberloafing between regions.

2. Method and Materials

2.1. Research model

This research consists of three variables, which are cyberloafing as independent variable, academic procrastination as dependent variable, and mediator variable is self-regulation. The research models proposed in this study can be seen in Figure 1.

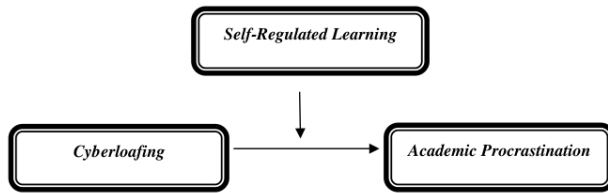


Figure 1. Cyberloafing, self-regulated learning, and academic procrastination

2.2. Participants

The population in this study was college students both the state and private universities from several cities in Indonesia. This study used nonprobability sampling with purposive sampling technique and the sampling criteria was students who have attended lectures for at least 1 year. According to Hair et al. (2018) the representative amount of sample can be used is with counting total amount of indicators multiply by 10, therefore the sample minimum should be 620 respondents and in the end the researcher has collected data with total of 732 respondents.

2.3. Data collection tools

In this study, cyberloafing is measured using the cyberslacking scale having 30 statements and a Cronbach alpha (α) of 0.925 developed by Akbulut et al. (2016). The respondents choose the answer from the choices, ranging from "never" to "very often".

Furthermore, academic procrastination is measured using the academic procrastination scale developed by McCloskey (2011), which consists of 25 statements with a Cronbach alpha of 0.95. The statement items in the questionnaires are assessed using a 5-point Likert scale where 1 "marks strongly agree," and 5 marks "strongly disagree" with the statement.

The moderating variable of self-regulated learning is measured using the self-regulated scale designed by Kadioglu et al. (2011) using 7 statements, Cronbach alpha coefficient (α) of 0.759, and the answer choices from 1 to 5, namely strongly agree, agree, less agree, disagree and strongly disagree.

2.4. Data collection process

The data collection technique was the survey method with the help of questionnaires. The questionnaires were distributed online using the google form platform. This involved a direct survey and link distribution to respondents who met the inclusion criteria, including an active undergraduate within 2014-2020.

2.5. Data collection analysis

The data collected is analyzed for validity, reliability, and hypothesis. Validity is an accuracy measurement of the content of statements made by researchers (Hair et al., 2018). Reliability is one of the major characteristics of a good measure instrument. The hypothesis in this research was tested by simple regression and moderating analysis. According to Ghazali (2011), the moderating variable is independent and used to weaken or strengthen the relationship between dependent and independent variables. The variables include dependent (academic procrastination), independent (cyberloafing), and moderating (self-regulated learning). All hypotheses are tested with a $p < 0.05$ significance level. The linear regression study and moderating tests were used to test the first and second hypotheses.

3. Results

Data of 732 respondents was collected with varying characteristics in table 1. The majority gender of respondents was women, which comprised 59.6% of the total sample. Almost all of them were from private universities (84.6%) with ages between 17 to more than 22 years.

Furthermore, the two most common age groups were 19-20 years (46.5%) and 21-22 years (34.7%). The class was linear with the age of the respondents, where most of them came from the class of 2018 (33.2%). The majority of the respondents had a GPA in the range of 3.00-3.99 (79.8%) spread across 22 faculties, though those from the Economics and Business were dominant with 50.7%.

Table 1. Description of respondent characteristics

Aspects	Category	Number of Respondents	Percentage
Gender	1. Male	1. 296	1. 40.4%
	2. Female	2. 436	2. 59.6%
University Type	1. State universities	1. 113	1. 15.4%
	2. Private universities	2. 619	2. 84.6%
Age	1. >22 years old	1. 69	1. 9.4%
	2. 21-22 years old	2. 254	2. 34.7%
	3. 19-20 years old	3. 340	3. 46.5%
	4. 17-18 years old	4. 69	4. 9.4%
			5.
Class	1. 2014	1. 5	1. 0.7%
	2. 2015	2. 7	2. 1%
	3. 2016	3. 31	3. 4.2%
	4. 2017	4. 152	4. 20.8%
	5. 2018	5. 243	5. 33.2%
	6. 2019	6. 167	6. 22.8%
	7. 2020	7. 127	7. 17.3%
			8.
GPA	1. 0.00-0.99	1. 37	1. 5.1%
	2. 1.00-1.99	2. 3	2. 0.4%
	3. 2.00-2.99	3. 96	3. 13.1%
	4. 3.00-3.99	4. 584	4. 79.8%

Aspects	Category	Number of Respondents	Percentage
5.	4	5. 12	5. 1.6%
Faculty	1. Economics and Business	1. 371	1. 50.7%
	2. Engineering	2. 71	2. 9.7%
	3. Information Technology	3. 46	3. 6.3%
	4. Language and Culture	4. 62	4. 8.5%
	5. Art and Design	5. 35	5. 4.8%
	6. Math and Science	6. 47	6. 6.4%
	7. Industrial Technology		
	8. Psychology	7. 7	7. 1%
	9. Science and Technology	8. 26	8. 3.6%
	10. Social Science and Political Science	9. 15	9. 2%
	11. Law	10. 11	10. 1.5%
	12. Agriculture	11. 9	11. 1.2%
	13. Medicine	12. 8	12. 1.1%
	14. Teacher Training	13. 3	13. 0.4%
	15. Earth Science and Technology	14. 3	14. 0.4%
	16. Computer Science	15. 4	15. 0.6%
	17. Communication	16. 5	16. 0.7%
	18. Nursing	17. 4	17. 0.6%
	19. Creative Industries	18. 1	18. 0.1%
	20. Textile	19. 1	19. 0.1%
	21. Tourism	20. 1	20. 0.1%
	22. Religion	21. 1	21. 0.1%
		22. 1	22. 0.1%

The validity analysis for the three variables shows a value above the standard of 0.40, which was 0.414-0.789. The reliability value, as indicated by a Cronbach alpha of 0.950 for cyberloafing (CS), was 0.925 for academic procrastination (AP) and 0.742 for self-regulated learning (SRL). Table 2 shows the validity and reliability test results of the three variables in each question item. Meanwhile, table 3 shows the descriptive statistics calculation, comprising of standard deviation, mean, and correlation between variables.

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Table 2. Validity and reliability test results

Variable	Component			Cronbach Alpha
	1	2	3	
CS1		.459		
CS2		.610		
CS3		.626		
CS4		.561		
CS5		.696		
CS6		.599		
CS7		.731		
CS9		.553		
CS10		.793		
CS11		.741		
CS12		.708		
CS13		.734		
CS14		.657		.950
CS15		.745		

CS16	.664		
CS17	.697		
CS18	.706		
CS19	.708		
CS20	.629		
CS21	.697		
CS22	.625		
CS23	.572		
CS24	.477		
CS25	.660		
CS26	.483		
CS27	.654		
CS28	.687		
CS29	.659		
CS30	.454		
AP2		.768	
AP3		.738	
AP4		.777	
AP5		.600	
AP6		.631	
AP7		.657	
AP9		.500	
AP10		.626	
AP11		.559	
AP13		.569	.925
AP16		.555	
AP17		.687	
AP19		.551	
AP20		.559	
AP21		.772	
AP22		.749	
AP23		.789	
AP24		.589	
SRL1	.657		
SRL2	.650		
SRL3	.546		
SRL4	.634		.742
SRL5	.414		
SRL6	.584		
SRL7	.622		

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Table 3. Descriptive Statistics and Correlation Analysis

	M	SD	1	2	3	4	5	6	7	8
Gender	1.5948	0.49126	1	-0.084*	0.055	-0.074*	0.151**	-0.055	0.030	-0.052
Age	2.5293	0.72298		1	0.129**	0.364**	-0.088**	0.019	0.070	-0.046
University	1.8008	0.39966			1	-0.148**	0.169**	0.039	0.000	0.040
Class	2.2647	1.13721				1	-0.161**	0.014	0.072	0.044
GPA	3.8417	0.44298					1	-0.005	-0.019	0.007
Cyberloafing	60.5464	21.53670						1	-0.083*	0.345**
Self Regulated Learning Academic Procrastination	28.0342	4.12097							1	-0.101**
	51.6475	14.48973								1

The first hypothesis proposed was that cyberloafing affects students' academic procrastination. Based on the hypothesis testing results, it is evident that cyberloafing affects academic procrastination with R square of 0.119 and a p-value indicated as $\beta = 0.345$. This result is in line with Durak (2019), who stated that cyberloafing behavior predicts academic success and academic procrastination of students. Marzoughi (2020) conceived that the quality of supervisors assigned to doctoral students had a significant effect on students' cyberloafing. This behavior gave positive and significant results in increasing student procrastination in completing their doctoral dissertations. Negara (2013) also discovered a relationship between cyberloafing and procrastination among science graduate students.

The second hypothesis aimed to know the effect of cyberloafing and academic procrastination when moderated by self-regulated learning. The results revealed the effect value (R square) of 0.132 and a standardized coefficient $\beta = -0.308$ with a p-Value of 0.001. This showed that self-regulated learning moderates the relationship between cyberloafing and academic procrastination. Academic procrastination occurs due to the failure of an individual to self-regulate. The students who experience academic procrastination cannot manage their disturbed minds and focus on other activities irrelevant to their academic undertakings. Prasad et al. (2010), Widiastuti and Margaretha (2016), as well as Margaretha et al. (2021), indicated that self-regulation reduces cyberloafing behavior. Therefore, when students have self-regulated learning, their academic procrastination behavior is significantly reduced.

Table 4. Hypothesis summary

Variables	R ²	Adjusted R ²	β	F	Sig.
Cyberloafing → Academic Procrastination	0.119	0.118	0.345	120.875	0.000
Cyberloafing → Self-Regulated Learning → Academic Procrastination	0.132	0.130	-0.308	49.911	0.001

4. Discussion

Cyberloafing is when employees use internet facilities provided by the company to carry out tasks not related to their job description. According to Gafni and Geri (2010), cyberloafing is quite common among employees. However, this research found that students also use the internet to help them do assignments and advance their knowledge for activities not related to learning. This trend poses a huge obstacle to learning if not handled properly (Lavoie & Pychyl, 2001).

This research found that cyberloafing behavior had an impact on academic procrastination by 11.9%. This shows the convenience, speed, and ease of access to technology in the form of the internet as a tool that supports procrastination. Knaus (2010) estimated that around 50%-95% of students are involved in procrastination. This is a huge barrier to their academic success because it reduces the quantity and quality of the time spent in the learning process (Ferrari et al., 1995; Marzoughi 2020; Negara, 2013). Study of Tezer (2020) found that during the pandemic male students experienced significant problems using the internet than their female counterpart. Additionally, there was an increase in academic procrastination behaviors due to the rise in internet usage duration. Therefore, academic procrastination is influenced by behavior related to the use of internet in daily activity.

This research also examined the moderating factor of self-regulated learning (SRL) in the effect of cyberloafing and academic procrastination. Zimmerman and Schunk (2011) define SRL as the individual ability from cognition, affection, and behavior to achieve personal goals. Self-regulation is an essential trait required of all students since it significantly affects self-control, especially concerning using the internet for the learning process. The results show that the effect value (R square) is 13.2%, with a p-value of 0.000, indicating that self-regulated learning moderates the relationship between cyberloafing and academic procrastination. Students with SRL show serious individuals whose objective is to excel academically and will do anything to avoid activities that interfere with achieving their academic goals

(Schunk, 2020). Therefore, students with SRL can control their environment and limit their access to materials from the internet that are not related to lectures (Gaudreau et al., 2014; Wu, 2015). Furthermore, they always use the internet to find information related to their learning materials to achieve academic success.

5. Conclusion

This research examined the impact of cyberloafing on academic procrastination. It showed the effect of self-regulated learning in the relationship between these two variables with a sample of Indonesian students. The research contributes to empirical evidence for the multidimensional relationship between cyberloafing and academic procrastination. Furthermore, studies associated with academic cyberloafing are mostly carried out in Western countries, thereby making it impossible to generalize the research results if it is adapted to students in Asia, such as in Indonesia. This is because students from Western cultures differ in their approach to the learning process. This research showed that cyberloafing affects students' academic procrastination. Durak, (2019), Marzooghi, (2020) and Negara, (2013) stated that cyberloafing behavior affects students' academic procrastination. Moreover, self-regulated learning moderated the relationship between cyberloafing behavior and academic procrastination. This shows that students with self-regulated learning reduced cyberloafing behavior.

6. Recommendations

This research provides practical suggestions that lead to a comprehensive understanding of cyberslacking, academic procrastination, and self-regulated learning. However, cyberloafing activity is measured using self-evaluation (self-reported), which may compromise the outcome. Future studies need to examine the causes and effects of cyberloafing on academic procrastination with a more systematic analysis through observations and interviews. Moreover, the role of the lecturer (teacher) was not discussed, even though it was evident that they contributed to student cyberloafing. Therefore, the factors promoting cyberloafing, such as the role and behavior of lecturers, learning methods, and classroom situations, can be considered for future research. Online surveys are significantly used in current studies due to the pandemic, thereby prolonging the data collection process, and the number of respondents is uncertain. Further research may use different methods to collect data in order to obtain a larger number of respondents.

This research proposes that students and universities maintain and increase self-regulated learning by making more specific targets and effectively manage free time. Additionally, universities should improve the quality of teaching offered by lecturers through seminars and training on effective teaching methods to reduce cyberloafing. For instance, the lecturers should use various learning methods to make the learning process in class lively.

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