Online Learning Supporting Components and Students' Ability to Study Online

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Abstract

This study aimed to describe online learning supporting components and students' ability to study online. It analyzed the frequency of three main indicators of online learning supporting components which are quality of internet connection, ability to use technology (apps and devices), facility to support online learning, and student's ability to study online. Moreover, it correlated online learning supporting components with students' ability to study online. The research used descriptive and correlative analyses. The data were analyzed to find the means and Spearman correlation coefficient. Forty-five respondents were selected using convenience sampling due to COVID-19 pandemic face-to-face restrictions. The instrument was a 25-item questionnaire made by the researcher. The findings of this research were: (a) the level of the facility to support online learning; (b) the level of ability to use technology; and (c) the level of quality of internet connection; (d) the level of students' ability to study online; and (e) there is a significant correlation between facility to support online learning and ability to use technology between students' ability to study online.

Keywords—online learning supporting components, facilities to study online, ability to use technology, quality of internet connection, student's ability to study online

1. INTRODUCTION

Online learning is a new form of learning nowadays. Pandemic Covid 19 was a reason for this new form of learning. There are a lot of schools and universities that perforce to use online learning to adapt to this situation. Online learning is a form of distance learning or distance education, which has long been a part of the American education system, and it has become the largest sector of distance learning in recent years [1]. Online learning has a new form of methods, techniques, principles, media, and equipment. In addition to online learning impact both students' and teachers' performance. Moreover, educators believe that online learning can be an effective tool in combating the rising cost of postsecondary education by spreading the cost of a class over a much larger number of students compared to the traditional setting [2]. There are a lot of definitions of online learning, and it incurred many different perceptions. Online learning could be considered e-learning or online learning that has been provided by technology. Likewise, the quality of the internet connection is very important to trigger online learning. Technology can simply overcome the learning materials more easily with digital tools. E-learning is defined as learning facilitated using digital tools and content that involves some form of interactivity, which may include online interaction between the learners and their teachers or peers‖ [3]. In addition, e-learning refers to educational processes that utilize information and communications technology to mediate synchronous as well as asynchronous learning and teaching activities‖ [4].

Online learning has several supporting components in its implementation during online school. These consist of the ability to pay Wi-Fi bills and data package quota, the ability to use

technology both devices and applications for online learning, and the quality of internet connection. Lacking these components can create barriers or inhibitions during the online learning process. Some inhibitions faced by teachers were caused by the following: many students found it difficult to carry out learning from home, or teachers struggled to communicate with their students due to their inability to optimize digital machines [5]. The most faced inhibition by students was financial problems. There were a lot of students who couldn't be able to provide digital tools as learning equipment because of financial inability. The Survey of the Institute Saiful Mujani Research and Consulting surveyed some barriers to online learning. Over 67% of respondents stated that the cost of studying online was burdensome, and those who thought that it was not burdensome or slightly burdensome were 32%, and 1% didn't answer [6]. Apart from students, teachers also have inhibitions to teaching online. Most teachers had to adapt to the situation. For example, they redesigned their learning models, methods, lesson plans, and learning activities. It truly takes teacher creativity in managing the media for the learning methods to be used [7]. Besides, the online learning activities become unfriendly to educators and students. In practice, some students found out that most of the difficulties they encountered had to do with the lacking understanding of the lessons taught through the online classes. This is because teachers only provide written materials without adequate explanations [8].

Generally, the e-learning barriers or inhibitions affect four areas. These include learners, teachers, curriculum, and schools. The learning barriers related to learners include financial problems, motivation, assessment, isolation from peers, inadequate e-learning skills and experience, affection, and social domain [9]. In addition, the investigation of barriers affecting e-learning implementation found that they were classified into four areas: students, instructors, infrastructure and technology, and institutional management [10]. The study reported that the most significant barriers were infrastructure and technology while the least significant one was students. Other crucial problems of online learning were technical problems such as the availability of tools and infrastructure, especially technology and applications [11]. For example, a researcher found out that the obstacle faced in online learning had to do with the internet network. More than 50 percent of the respondents in the study complained about this network problem they faced in Kulonprogo and Gunungkidul [12].

There are top eight e-learning barriers that inhibit online learners' engagement with e-learning content. These are limited technology experience, lacking motivation, personal cognition, too challenging e-learning materials, inadequate support, lack of community involvement, and online learner boredom [16]. One study revealed findings that students felt uncomfortable studying from home. The survey results from UNICEF stated that as many as 66 percent of the 60 million students from various levels of education in 34 provinces admitted that they were uncomfortable studying at home during the Covid-19 pandemic [14]. Besides this, frustration in online learning is also a matter; it often stems from students not knowing how or when to contact their professors/tutors, along with poor communication about coursework expectations [15]. However, in recent years, technological expansion grew up and increased the effectiveness and efficiency of education. One of the approaches that have been found to help was the use of Information and Communications Technology (ICT) which modifies our lives and our perspectives of the world unimaginably [16].

Another online learning inhibition could arise from a student's perspective. As stated that the results of observation showed that students had difficulties taking online classes because their teacher only provided the material from the text without explaining it [8]. Moreover, students' voices are important on this issue. Therefore, future research should investigate students' opinions regarding online learning to examine the challenges faced by students. In addition, the complaints that are often expressed are related to changes in learning time and that they can interfere with the activities of parents. It has to be a concern for teachers because they need to select appropriate teaching methods which suit a certain learning time. Another important concerned issue in e-learning is identifying the technical, cultural, and skills challenges of e-learning [17]. Furthermore, success in applying the e-learning system in managing the

knowledge and educational needs of higher education organizations cannot be achieved without recognizing the technical, cultural, and skills challenges of e-learning [16]. Online education has not lived up to its potential, according to a new report, which said fully online course work contributes to socioeconomic and racial achievement gaps while failing to be more affordable than traditional courses [18]. These would be some serious problems in dealing with the serious pandemic situation.

Two studies sought to replicate and extend the seductive effect of decorative pictures in expository text comprehension to an e-learning environment. In the first study, undergraduate students read and answer questions about two texts, with and without decorative, irrelevant images, in an e-learning course. The presence of decorative images had a small detrimental effect on comprehension. In the second study, participants read more difficult texts (low prior knowledge texts on multiple screens) and completed working memory and inhibitory ability tests. A significant interaction between comprehension and perceptual/attentional inhibitory ability was found: Participants with lower inhibitory capacity were affected by irrelevant pictures. In conclusion, evidence supported the hypothesis of a detrimental effect of irrelevant, decorative images on comprehension in e-learning, particularly for students with low attentional inhibition. So based on this research, unclear images displayed during learning will become an obstacle to understanding the material and are considered a form of distraction[19].

Institutional factors such as the lack of understanding of online pedagogy and online learning styles, lack of administrative support for online education and for marketing the program, number of students enrolled, faculty qualifications, tuition rates, and length of the program can also doom the program to failure [20]. Also, institutions need to take student concerns seriously. Students can also have inhibitions about a group of work while taking a class online. An online class might not support collaborative learning. In collaborative learning tasks where individuals may be barely managing to navigate the system on their own, let alone need to traverse the complex environments of group management interaction and social negotiation [21].

This pandemic makes students concerned to find out a new appropriate method for learning. This is not an easy step for a student to do much modification of learning. Online learning places more emphasis on knowledge transfer, while the essence of education is not only that. Education must form a better person from students[22]. Based on this, students should concern about emphasizing the material of learning appropriately. Besides students‘ ability and capability to study online, teachers‘ have their way to trigger students‘ learning activities. Teachers need to carefully choose the learning materials to avoid a misconception between teachers and students when they study the materials [23]. On the other hand, teachers also must see the attainment of basic competencies that should be mastered by students. So, presenting materials when learning is done online has to be done with maximum effort. A study found that students were found to be not sufficiently prepared for balancing their work, family, and social lives with their study lives in an online learning environment. Students were also found to be poorly prepared for several e-learning competencies and academic-type competencies [24]. Likewise, there is a low-level preparedness among the students concerning the usage of Learning Management System.

Students want two-way interaction which sometimes gets difficult to implement. The learning process cannot reach its full potential until students practice what they learn. Sometimes, online content is all theoretical and does not let students practice and learn effectively. Using technological advancement, learners now want quality programs they can access from anywhere and at any time. Because of these demands, online education has become a viable, alluring option for business professionals, stay-at-home-parents, and other similar populations. In addition to flexibility and access, multiple other face value benefits, including program choice and time efficiency, have increased the attractiveness of distance learning [25]. Students start to be more creative and interactive in their online learning. There is such progress that has been seen in their learning. For example, students became more creative to make interesting videos and more interactive by often attending webinars and seminars related to their studies. It means that they

suddenly adapt to this situation of the pandemic. Online programs should be designed in such a way that they are creative, interactive, relevant, student-centered, and group-based [26].

This study sought to describe students' online learning supporting components and perceptions of their ability to study online. Secondly, it inferred the correlation between these learning supporting components and students' perceptions of ability to study online. Specifically, this study focused to answer the following research questions: (1) What is the frequency of online learning device ownership among students? (2) What is the frequency of online learning application use among students? (3) What is the frequency of (a) Wi-Fi, (b) data package quota, and (c) Wi-Fi and data package quota use among students? (4) What is the level of students' ability to regularly pay for Wi-Fi and buy data package quota? (5) What is the level of students' ability to use online learning devices? (6) What is the level of students' skills of using online learning applications? (7) What is the level of students' internet connection quality? (8) What is the level of students' ability to study online? and (9) Is there any significant correlation between students' ability to pay for Wi-fi and buy data package quota, use online learning devices, and use online learning apps.

2. METHODS

This research was a quantitative study that used the survey method. It used descriptive statistics describing the frequencies as well as mean scores and inferential statistics to draw correlative conclusions. The respondents of this study were 10th-grade students of a private senior high school in Airmadidi, Manado. These students were enrolled in the first semester of the 2020/2021 academic year. In the survey, 45 students consisted of 19 males and 26 females were willing to participate in the data gathering process through a convenience sampling technique due to the face-to-face restrictions of COVID-19 pandemic.

2.1 Data Gathering

The data of this study were obtained from the respondents who responded to an online questionnaire. The questionnaire was designed in Google Forms and sent to students' WhatsApp group. After the respondents filled out the questionnaire, the data were downloaded and then analyzed.

2. 2 Instrument

The questionnaire used in this study was self-constructed. It was made up of two parts: the first is about the frequency of student online learning supporting components, and the second is about the frequency of students' ability to study online. The questionnaire consisted of short yes/no questions and some items in Likert scales.

Table 1 Questionnaire of Oline Learning Supporting Components and Perceptions of Online Learning Ability

Items Number	Items
	Fasilitas Penunjang TIK
1	*Apakah anda memiliki telpon pintar?*
2	*Apakah anda memiliki komputer/laptop?*
3	*Apakah anda memiliki aplikasi penunjang belajar daring di telepon pintar/laptop anda?* *WhatsApp, Facebook, Google Classroom, Google Meet, Microsoft Teams, Zoom*
	Tipe Jaringan Internet yang Digunakan
4	*Wi-Fi*
5	*Paket Data*
6	*Wi-Fi and Paket Data*

	Kemampuan Berlangganan/Membeli Paket Data Internet (Skala Likert:5-Sangat mampu, 4-mampu, 3-kurang mampu, 2-tidak mampu, 1-sangat tidak mampu)
7	*Untuk berlanggaran internet melalui jaringan wifi, saya..*
8	*Untuk membeli paket data internet, saya…*
	Ketrampilan Menggunakan TIK saat Pembelajaran Daring
9	*Ketrampilan saya dalam menggunakan telepon pintar saat pembelajaran daring*
10	*Ketrampilan saya dalam menggunakan komputer/laptop saat pembelajaran daring*
11	*Ketrampilan saya dalam menggunakan Whats App saat pembelajaran daring*
12	*Ketrampilan saya dalam menggunakan aplikasi Facebook saat pembelajaran daring*
13	*Ketrampilan saya dalam menggunakan aplikasi Google Classroom saat pembelajaran daring*
14	*Ketrampilan saya dalam menggunakan aplikasi Google Meet saat pembelajaran daring*
15	*Ketrampilan saya dalam menggunakan aplikasi Microsoft Teams saat pembelajaran daring*
16	*Ketampilan saya dalam menggunakan aplikasi Zoom saat pembelajaran daring*
	Kemampuan Pembelajaran Daring
17	*Saya memiliki koneksi internet yang baik.*
18	*Saya sanggup menyelesaikan tuntutan tuntutan kelas daring.*
19	*Saya termotivasi untuk belajar secara daring.*
20	*Saya memiliki suasana rumah yang menunjang untuk belajar daring*
21	*Dalam pembelajaran daring, saya dapat belajar secara cermat.*
22	*Dalam pembelajaran daring, saya dapat belajar secara fleksibel.*
23	*Dalam pembelajaran daring, saya dapat belajar secara efisien.*
24	*Dalam pembelajaran daring, saya dapat memahami materi pelajaran dengan jelas.*
25	*Dalam pembelajaran daring, saya dapat menguasai kompetensi pengetahuan yang dituntut oleh guru.*
26	*Dalam pembelajaran daring, saya dapat menguasai kompetensi ketrampilan yang dituntut oleh guru.*

A pilot study was conducted to estimate the reliability of two parts of the questionnaire: (1) the ability to use online learning devices and (2) the ability to learn online. It was tried out on 34 students and their responses were analyzed to estimate the reliability indexes of the two parts. To measure the reliability, the coefficient alpha analyses were conducted. The results showed that all the Cronbach's Alpha values were greater than .70. (.72 for the ability to use online learning devices and .93 for the ability to learn online). This means that all the items are considered reliable or consistent to measure.

3. FINDINGS AND DISCUSSION

3.1 Results

To answer all the research questions, the data analyses are presented descriptively and inferentially as shown in the findings.

3.1.1 Learning Devices Ownership among Students.

The frequency of online learning devices ownership among students showed that the percentage of smartphone ownership is 95.7%, and those who did not have a smartphone is 4.3%. Meanwhile, laptop/computer ownership is 87% and those who did not have a laptop/computer is 13%. Based on the interpretation percentage, the level of online learning devices ownership is 91.3 %.

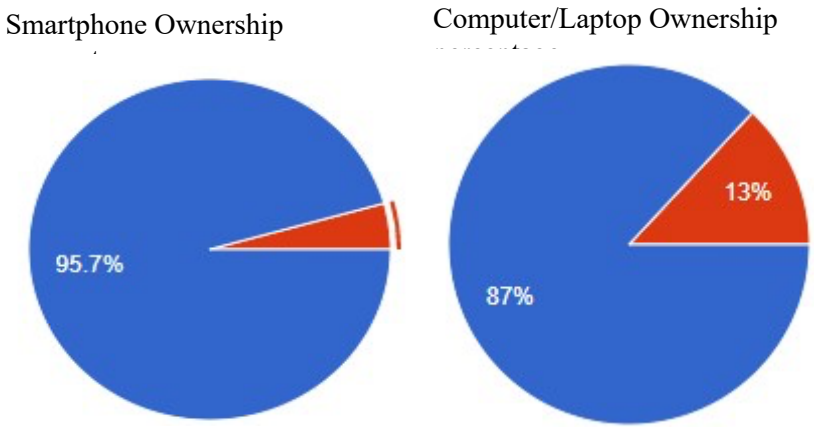

Figure 1 Online learning devices ownership among students

3.1.2 Online Learning Application Used Among Students

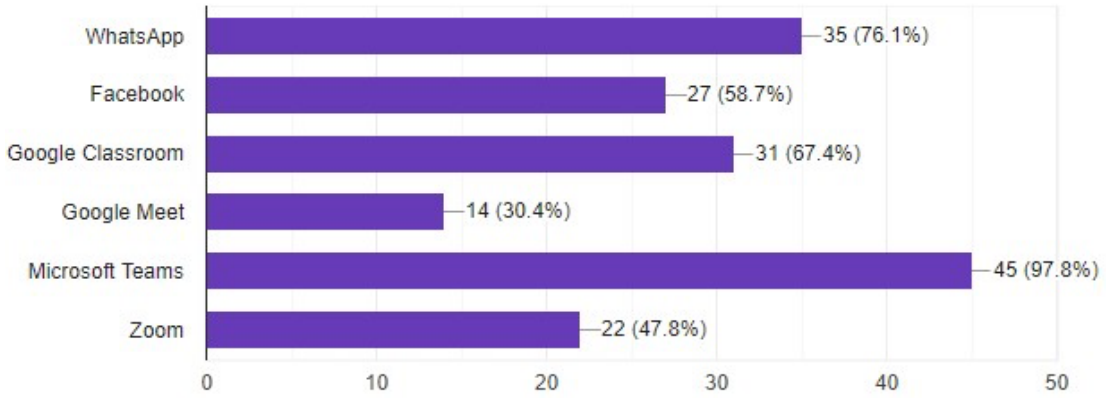

Figure 2 Online learning applications use among students

The second research question tried to find out the level of online learning applications used among students. Based on the finding, the result showed the following percentages: Whatsapp 76.1%, Facebook 58.7%, Google Classroom 67.4%, Google Meet 30.4%, Microsoft Teams 97.8%, and Zoom 47.8%.

3.1.3 Data package used among students

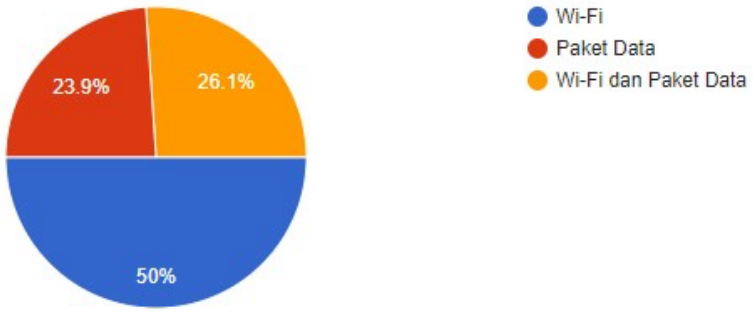

Figure 3 The frequency of network type

The data showed that 50% of the students used Wi-fi during their online learning. Some students (26.1%) admitted used both Wi-fi and data packages in their online learning. Finally, it showed that 23.9 % depended only on data package data which implies they do not have Wi-fi for internet access.

3.1.4 Students' Ability to Pay for Wi-fi and Buying Data Package Quota.

Table 2. Ability to regularly pay for Wi-Fi and buy data package quota

Statistics

Mean Score of Ability to Pay Wi-fi Bill and Buying Data Quota	
Valid N	45
Missing	0
Mean	3.84

Based on the finding, the result showed that the mean was 3.84. It was considered the level of online learning ability to regularly pay for WiFi and buy data package quota was high. Based on the interpretation of the data, the mean score was in the range of 3.50-4.49. It implies that the students' ability to regularly pay for Wi-Fi bills and buy data package quota was significantly at a high level.

3.1.5 Students' Ability to Use Online Devices

Table 3. Ability to use online learning devices

Statistics

Mean Score of Ability to Use Devices	
Valid N	45
Missing	0
Mean	3.96

Based on the finding, the result showed that the mean was 3.96. It is considered that the level of students' ability to use online learning devices was good. It means the students' ability

to use online learning devices was considered good to using devices such as laptops or smartphones.

3.1.6 Students' Skills in Using Online Learning Applications

Table 4 Students' skills in using online learning applications

Statistics	
Mean Score of Ability to Use Apps	
Valid N	45
Missing	0
Mean	3.94

The finding showed the mean was 3.94. This means that the students' ability in using learning applications was significantly at a good level, or they could operate online learning applications well.

3.1.7 Quality of Internet Connection

Table 5 Quality of internet connection

Statistics	
Mean Score of Internet Connection Quality	
Valid N	45
Missing	0
Mean	3.67

The result showed that the mean was 3.67. It means that the quality of students' available internet connection was good, or the internet connection ran well during an online class.

3.1.8 Students' Ability to Study Online

Table 6 Students' ability to study online

Statistics	
Mean Score of Ability to Study Online	
Valid N	45
Missing	0
Mean	3.67

Regarding students' ability to study online, the result showed that the mean was 3.67. It means that the level of students' ability to study online was good. This implies students had a good online learning environment that supported and provided them an opportunity to succeed in online learning.

3.1.9 Significant Correlations

Type of Correlation Analysis	r_{xy}	*P*-Value
Spearman's Rho	.404**	.006

Table 7 Ability to pay for Wi-Fi bills and buy data packages and ability to study online

Type of Correlation Analysis	r_{xy}	*P*-Value
Spearman's Rho	.588**	.000

Table 8 Ability to use online learning devices and ability to study online

Type of Correlation Analysis	r_{xy}	*P*-Value
Spearman's Rho	.254*	.050 *

Table 9 Ability to use online learning apps and ability to study online

Based on the findings, the result showed that the students' ability to study online significantly correlated with three things. First, it correlated with students' ability to pay for Wi-Fi bills and buy internet data packages (*p*-value = .006). Second, it correlated with students' ability to use online learning devices (*p*-value = .000). Finally, it correlated with students' ability to use online learning apps with (*p*-value = .050).

4. CONCLUSIONS

Online learning offers adventures for students to experience new ways of learning, but a few students did not have both computers and smartphones for online learning. This condition where students did hot have enough online supporting devices can inhibit online learning activities. Due to the positive correlation between three online learning supporting components and students' online learning ability, it was concluded that the higher the levels of online learning supporting components, the higher the student's ability to study online. In other words, the higher the students' ability to pay for Wi-Fi bills and buy data package quota, use online learning devices, and use online learning apps, the better their ability to study online.

5. RECOMMENDATIONS

Several recommendations are recommended to school teachers who teach during this pandemic situation and to future researchers. First, the schools need to make sure that students' ability to pay for Wi-Fi bills and buy data package quota, use online learning devices, and use online learning apps are consistently maintained during the online learning process. Second few students cannot afford to buy both smartphone and personal computer, the school needs to see the needs of these specific students and provide the way out, and the last is when necessary, other future research could be conducted using different approaches or methods to study related variables.

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