

Online Learning Management And Grouping The Use Of Learning Media During The Covid-19 Pandemic Based On Multiculture In Indonesia

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Abstract. Learning applied in Indonesia starting from the elementary school to the higher education levels generally uses face-to-face or direct learning methods. However, since the outbreak of the Covid-19 disease, all methods have turned into online learning methods at all levels and cultures.

Aim. This affects all aspects of learning, such as comfort, understanding, and learning outcomes. This study aimed to determine the differences in learning outcomes between the semester before the Covid-19 pandemic and the semester during the Covid-19 pandemic in which online learning is implemented.

Methodology and Research methods. To identify the differences in the results using the face-to-face method and the online method, a study was conducted on the classification of learning media users from elementary school to higher education levels using the k-means method.

Results. The results of grouping data on online learning media users showed that all levels of education were quite ready to carry out online learning. Moreover, cultural differences in Indonesia have not had an impact on school commitments to perform online learning during the Covid-19.

Scientific novelty. Learning management before the pandemic and after the pandemic is certainly important information to research, with the hope of knowing the readiness of teachers and students in dealing with changes in learning methods, differences in student learning motivation and learning outcomes obtained. The final target of the findings in this study is an overview of online learning management and grouping the use of learning media during the Covid-19 pandemic in Indonesia's multicultural culture, with the hope that it can be positively correlated with learning outcomes.

Practical significance. This research is expected to be able to contribute to stakeholders in terms of providing empirical evidence about the needs, shortcomings, and desires that must be considered when a teacher in managing learning during a pandemic demands being able to manage the learning process in accordance with existing conditions and the local culture.

Keywords: Learning Management, Learning, Grouping, Multicultural

Introduction

The Covid-19 pandemic has caused significant world changes in many fields, such as health, finance, education, and social life [1]. Online teaching and learning have become a necessity for education around the world during the COVID 19 pandemic [2]. Changes in the learning process

during the Covid-19 pandemic occurring suddenly had a very significant impact on various aspects of learning, including the selection of learning media, learning outcomes, educator readiness, and students in determining the new learning model. Covid-19 also has affected how teaching is delivered and the provision of interactive services

as well as students' learning needs [3].

The Covid-19 pandemic has pragmatic implications regarding campus/school closures and virtual learning transitions [3]. This condition requires the teaching and learning process to be held at home [4] and switched to virtual and online learning [5]. The Covid-19 pandemic has also changed the learning pattern in Indonesia. Fluctuations in the spread of the Covid-19 outbreak require decisions to decide the right learning method, including limiting the time and number of students studying with an odd-even system, implementing online learning from home, or door-to-door learning for some areas with limited internet networks. The Minister of Education and Culture of Indonesia, Nadiem Makarim, fully supports policies for regulating and restricting the implementation of learning during the increasingly worrying spread of COVID-19. Therefore, the learning process usually including class meetings is shifted to online meetings or working from home (WFH). In Indonesia, there are regulations to limit outdoor activities [6].

The policy of changing learning methods faces the problem of real conditions in Indonesia, as a country with multiculturalism and having very diverse levels of readiness to accommodate changes in learning methods from face-to-face learning to online learning. The problem is, online learning has not become part of most levels and educational institutions in Indonesia [7]. Demographic conditions in several regions in Indonesia are very diverse, which affects the readiness to respond to online learning methods during the pandemic. In some areas uncovered by the internet network, online learning is not a learning solution during the pandemic. Some people in remote areas are not necessarily familiar with technology services, and their socioeconomic status is also quite diverse. The results of research by Rasmitadila et al. [8] reported that operational funding assistance for schools related to internet costs to support the online learning process was not yet fully an implementation solution. This diversity requires educators at all levels of education to innovate, prepare, and choose learning methods in accordance with the limitations and conditions of the area while taking into account the culture of the local community. Educators are required to have

accessibility, connectivity, flexibility, and the ability to bring up various types of interactions during learning [9]. Educators must be able to ensure that teaching and learning activities continue through the determined learning method [10], and they are required to design appropriate learning media with appropriate online learning [11].

Latjuba (2019) reported several social media generally used in online learning systems, such as WhatsApp, Telegram, Instagram, Zoom applications, or other media as learning media. Online learning with smartphone media is "like a sword" in educational success. Some research found that smartphone use among students had the potential to support and negatively affected academic success, even showed low academic performance [12]. However, in the current pandemic conditions, the use of social media as a learning medium is the main choice. Online learning media can be used by combining it with the assignment of learning materials carried out independently at home. The current availability of technology helps educators to provide and assess all assignments and homework online, but this should not exceed the limit because too many tasks can make students experience difficulties in learning [13].

Learning methods in Indonesia before the Covid-19 pandemic were generally classical and prioritized face-to-face learning. Based on Law No. 20 of 2003, education in Indonesia has three channels, namely formal, non-formal, and informal education. These statutory provisions are the basis for implementing the learning process at various levels of education in Indonesia. The face-to-face learning method is the main learning method, although in some conditions and at certain levels of education, online learning methods can be used. This learning pattern has an influence on the extent to which educators and students can adapt to online learning during the pandemic.

Learning management is a challenge for all educators to create interesting and fun learning and the widest learning opportunities for students to be actively involved during the learning process. Management of the learning process includes planning, organization, implementation, and evaluation [14]. Learning management during the

pandemic requires educators to manage the learning process according to local conditions and culture. This study aimed to obtain an overview of online learning management and group the use of learning media during the Covid-19 pandemic in Indonesian multiculturalism. Learning management before and after the pandemic and is certainly significant information to research, with the hope of identifying teachers' and students' readiness in dealing with changes in learning methods, as well as differences in student learning motivation and learning outcomes obtained. The final target of the findings in this research is an overview of online learning management and grouping the use of learning media during the Covid-19 pandemic in Indonesia's multiculturalism, expected to be positively correlated with learning outcomes.

Literature Review

Several schools, colleges, and universities have canceled face-to-face teaching during the Covid-19 pandemic. This phenomenon has arisen the need for innovative online learning throughout the academic school year [15]. Universities in other badly affected regions, such as Italy, Iran, and Singapore, must stop studying, close their campuses, and switch to online learning instead of direct teaching [16]. Online learning allows students to work at a place and time suiting their learning needs and enables them to have sufficient time to focus on learning content. From the COVID-19 pandemic, we learn that educators and students should responsively adapt to the happening situations, and be oriented towards online device usage [17].

Educators use virtual classroom platforms in online learning to develop the process of

understanding the learning material content, as well as improve critical thinking, problem-solving, and independent learning processes [18]. The use of virtual classroom platforms, such as video conferencing (Google Hangouts Meet, Zoom, Slack, Cisco, WebEx) and customizable cloud-based learning management platforms, such as Elias, Moodle, BigBlueButton, and Skype is increasing. Learners gain knowledge online by utilizing various applications as learning media, such as Youtube, Zoom, Google Meet, and other available applications [19]. To accomplish the challenges of the COVID-19 pandemic in learning, many universities are adapting and introducing educational technology products, including video conferencing platforms, such as Zoom and Moodle to continue learning [20].

The effectiveness of online learning has shown some advantages due to increased flexibility and learning opportunities, such as easy access to experts, creating an interactive learning environment atmosphere, self-development through seminars or online courses, and joining several communities. There are also several disadvantages of online learning, such as internet browsing problems, computer compatibility, or technical problems hindering the learning effectiveness [21]. Research analysis showed that students enjoyed learning through online mode if they could access the proper facilities. Flexible time and place were the most preferred feature of online learning. However, at the same time, poor network and connectivity were highly unpreferred elements [22].

Material and Methods

This study is quantitative descriptive research conducted as the following flowchart.



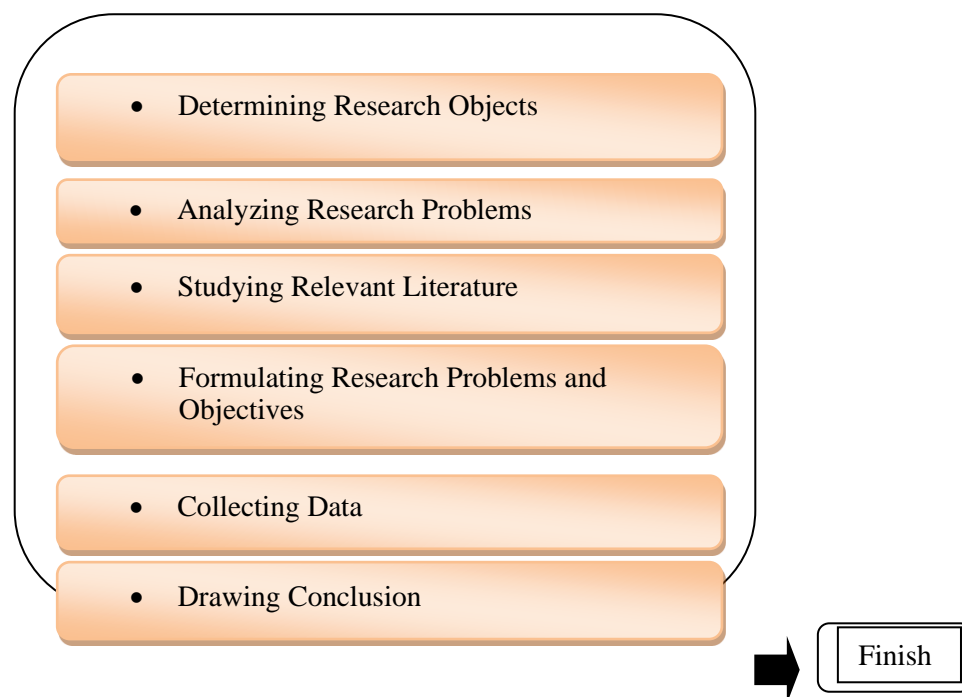


Figure 1 Flowchart of Research

The research stages in Figure 1 begin with 1) the preparation consisting of the process of preparing instruments and designing the research; 2) determining the object of research. This research set the three educational levels as the objects, including Elementary School (ES), Junior High School (JHS), and Senior High School (SHS), and Higher Education (HE); 3) research problem analysis; 4) reviewing relevant literature and supporting the designed research focus including problem-solving methods and the extent of the study; 5) problem formulation and research objectives. The problems studied in this study focused on online learning management and grouping the use of learning media during the Covid-19 pandemic; 6) collecting the data consisting of online learning management during the pandemic, the types of media used, the average semester scores, and learning completeness before and after the pandemic. The online learning management studied included planning, organizing, implementing, and evaluating; 7) data conclusion and research findings.

Participant

The total participants were 350 respondents, consisting of 220, 60, 40, and respondents at the Higher Education, Senior High School, Junior High School, and Elementary

School levels, respectively. Data exploration was carried out randomly from several areas, namely in Java, Kalimantan, Sumatra using observation sheets and online questionnaires. The selection of data sources with those three regions is based on the purpose of comparing the implementation of online learning between different cultures in Indonesia.

Instruments

Instruments used in this research were in the form of an online observation sheet to explore data needed at a certain educational level. The indicators employed in this research are as follows:

- a. Names
- b. Educational levels
- c. Universities/ Schools
- d. Locations
- e. Learning programs
- f. Learning media used during the Covid-19 pandemic
- g. Learning intensity
- h. Semester GPA during the Covid-19 pandemic
- i. Semester GPA before the Covid-19 pandemic
- j. Lecturers'/Teachers' average ages

Data Collection

The research data were obtained by several techniques, including questionnaires and observation sheets. The questionnaire was used to collect data on the use of online learning media during the Covid-19 pandemic from all students at all levels, from elementary school to university levels. Observation sheets were utilized to explore teacher online learning management during the Covid-19 pandemic, from all observers at each educational level. The entire data obtained were then processed to attain the conclusion.

Data Analysis

Data analysis techniques for online learning

management and the use of learning media from questionnaires and observation sheets were in the form of quantitative numerical descriptions, where the values of online learning management were obtained from the percentage of the gained scores divided by the maximum score. The assessment of learning planning used a questionnaire scale of 4 and the evaluation employed a scale of 4. The classification of online learning management assessment is presented in Table 1. The assessment of learning implementation used a scale of 2, where if the answer is yes = 2, and no = 1, the assessment classification is presented in Table 2.

Table 1. Classification of Learning Planning and Evaluation Assessment

Interval	Notes
80 – 100	Very Good
60 – 79.9	Good
40 – 59	Good Enough
20 – 39	Less Good
0 – 19.9	Bad

Table 2. Classification of Learning Implementation Assessment

Interval	Notes
86% – 100%	Very Good
76% – 85%	Good
56 – 75%	Good Enough
<56%	Less Good

For the effectiveness of learning outcomes during the Covid-19 pandemic, the students' average learning outcomes before and after the Covid-19 pandemic were obtained. Hypothesis testing employed N-gain test, paired test, and Independent T-test test assisted by SPSS-22 program. Learning outcomes were considered to increase if the results during the Covid-19 pandemic (post) (X_2) were higher than the results before the Covid-19 pandemic (pre) (X_1) or ($X_2 > X_1$). The N-gain value was data on the difference between the average semester scores of students

during the Covid-19 pandemic and the average semester scores of students before the Covid-19 pandemic, as presented in the following formula.

$$N \text{ gain} = \frac{S_{\text{post}} - S_{\text{pre}}}{S_{\text{maks}} - S_{\text{pre}}}$$

The categories of effectiveness interpretation of the N-gain value in the form of percentage are presented in Table 3, while the categories of score gain index are displayed in Table 4.

Table 3. N-Gain and Effectiveness Values

Quality	N_{gain}	Category
Significantly Increasing	$g \geq 0.7$	High
Increasing	$0.3 < g < 0.7$	Moderate
Moderately Increasing	$g \leq 0.3$	Low

Table 4. Categories of N-Gain Effectiveness Interpretation

Percentage (%)	Interpretation
> 40	Not Effective
40-55	Less Effective
56-75	Effective Enough
> 76	Effective

Results and Discussion

Online Learning Management

The management of learning implementation in learning management aims to achieve learning objectives. The learning implementation is more well-directed when it begins with planning and designing learning models, complete with the preparation of appropriate learning tools. The Covid-19 pandemic conditions require educators at all educational levels to be more careful in choosing and determining their learning plans, starting from the lecture timeline, Semester Lecture Plans, and other tools for the Higher Education

level, semester programs, syllabus, and Learning Implementation Plans for high school, junior high, and elementary levels that were previously signed by the decision-makers.

1. Online Learning Planning

Learning planning in this study started from formulating goals that will be achieved by a teaching activity, methods used to assess these goals, materials that will be delivered, how to convey them, and instruments or media needed. The assessment of learning planning in this research is presented in Table 5.

Table 5. Assessment of Learning Planning

	Educational Levels	Study Programs/Subjects	Average Indicators of Learning Planning									Scores (%)	
			Problem Identification	Problem Formulation	Goal Determination	Alternative Elaboration	Material Selection	Method Selection	Media Selection	Evaluation Instruments and Tools Selection	The Readiness of Implementation Learning		The suitability between Semester Lesson Plans/Implementation
Java	HE	1. Biology Education	4.0	4.0	3.4	4.0	4.0	3.6	3.8	3.4	3.8	4.0	94.9
		2. Physics Education	4.0	3.8	3.8	3.8	3.6	3.4	3.8	3.6	3.8	3.8	93.5
		3. English Education	3.8	3.6	3.8	3.8	3.4	4.0	4.0	4.0	3.8	4.0	95.5
		4. Arabic Education	3.8	3.6	3.4	3.8	3.4	3.4	4.0	4.0	4.0	3.8	93.2
			3.9	3.7	3.6	3.9	3.6	3.6	3.9	3.8	3.9	3.9	94.2
Score = 94.2 = Very Good													

SHS	1. Biology	3.6	3.8	3.4	3.8	3.8	3.8	3.8	3.6	3.8	3.6	92.4	
	2. Physics	3.2	3.8	3.2	3.6	3.2	3.6	3.4	3.4	3.4	3.6	85.5	
	3. Mathematics	3.2	3.8	3.6	3.8	3.8	3.8	3.4	3.8	3.8	3.8	92	
	4. Chemistry	3.4	3.8	3.6	3.8	3.8	3.8	3.6	3.6	3.8	3.8	92.4	
		3.4	3.8	3.5	3.8	3.7	3.7	3.5	3.6	3.7	3.7	90.7	
Score = 90.7 = Very Good													
JHS	1. Natural Sciences	3.6	3.8	3.8	3.8	3.6	3.6	3.4	3.8	3.4	3.8	91.5	
	2. Social Sciences	3.8	3.8	3.6	3.6	3.4	3.6	3.4	3.8	3.8	3.6	91	
	3. Mathematics	3.8	3.8	3.8	3.4	3.6	3.4	3.4	3.8	3.8	3.8	91.5	
	4. English	4.0	3.8	3.6	3.8	3.6	3.8	3.6	3.8	3.8	3.8	94	
		3.8	3.8	3.7	3.7	3.6	3.6	3.5	3.8	3.7	3.8	92	
Score = 92 = Very Good													
ES	1. Thematic	3.6	3.2	2.8	3.2	3.4	3.4	3.2	3.2	3.0	3.6	81.5	
	2. Natural Sciences	3.8	3.0	3.0	3.0	3.4	2.8	3.4	3.4	3.0	3.8	81.5	
	3. Social Sciences	3.8	3.2	3.2	3.2	3.4	3.8	3.2	3.2	3.0	3.2	83	
	4. Local Content	3.8	3.8	3	3.8	3.0	3.8	3.8	3.8	3.0	3.0	87	
		3.8	3.3	3.0	3.3	3.3	3.5	3.4	3.4	3.0	3.4	83.3	
Score = 83.3 = Good													
Sumatera	HE	1. Biology Education	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	95	
		2. Physics Education	3.6	3.6	3.6	3.6	3.4	3.4	3.8	3.8	3.8	90.5	
		3. English Education	3.6	3.6	3.6	3.4	3.4	3.8	3.8	3.8	3.8	4.0	91
		4. Arabic	3.6	3.6	3.6	3.6	3.8	3.8	3.8	3.8	3.8	4.0	93.4
			3.7	3.6	3.6	3.6	3.7	3.7	3.7	3.8	3.8	3.9	92.7
Score = 92.7 = Very Good													
SHS	1. Biology	3.6	3.6	3.6	3.6	3.8	3.8	3.8	3.4	3.6	3.6	90.9	
	2. Physics	3.8	3.6	3.6	3.6	3.8	3.4	3.6	3.6	3.4	3.4	89.4	

	3. Mathematics	3.6	3.6	3.8	3.2	3.4	3.2	3.2	3.4	3.6	86.5
	4. Chemistry	3.8	3.8	3.2	3.6	3.6	3.4	3.6	3.8	3.8	90.9
		3.7	3.6	3.6	3.5	3.6	3.5	3.5	3.5	3.6	89.4
		Score = 89.4 = Very Good									
JHS	1. Natural Sciences	3.6	3.6	3.8	3.6	3.6	3.6	3.6	3.4	3.8	90.5
	2. Social Sciences	3.8	3.6	3.6	3.6	3.8	3.6	3.6	3.4	3.8	91
	3. Mathematics	3.6	3.6	3.8	3.8	3.8	3.6	3.6	3.4	3.8	92
	4. English	3.8	3.8	3.8	3.6	3.6	3.4	3.8	3.8	3.8	92.5
		3.7	3.7	3.8	3.7	3.7	3.6	3.7	3.5	3.8	91.5
		Score = 91.5 = Very Good									
ES	1. Thematic	2.6	3.6	3.2	2.6	3.6	3.8	3.6	3.6	3.6	83.4
	2. Natural Sciences	3.2	2.6	3.6	3.8	3.6	3.6	2.8	2.8	3.2	80.9
	3. Social Sciences	3.2	2.6	3.6	3.8	3.6	3.6	2.8	3.2	3.2	82.4
	4. Local Content	2.6	3.2	3.2	2.6	3.6	2.8	3.6	3.6	3.6	80.4
		3.3	3.0	3.4	3.2	3.6	3.4	3.2	3.3	3.4	81.8
		Score = 81.8 = Good									
HE	1. Biology Education	3.8	3.8	3.4	3.8	3.8	3.8	3.8	3.4	3.6	92.5
	2. Physics Education	3.8	3.8	3.4	3.8	3.8	3.6	3.8	3.6	3.8	93
	3. English Education	3.8	3.6	3.4	3.4	4.0	4.0	3.8	3.6	3.6	89.2
	4. Arabic Education	3.8	3.6	3.6	4.0	4.0	3.4	3.4	3.4	3.6	92
		3.8	3.7	3.5	3.8	3.9	3.7	3.7	3.5	3.7	92.3
		Score = 92.3 = Very Good									
SHS	1. Biology	3.0	3.0	3.8	3.4	3.2	3.2	3.4	3.0	3.6	83.5
	2. Physics	3.0	4.0	3.8	3.2	3.2	3.0	3.4	4.0	3.4	86.9
	3. Mathematics	3.0	3.0	3.0	3.0	3.2	3.0	3.4	3.0	3.8	80.5
	4. Chemistry	3.0	3.0	3.0	3.0	3.4	3.0	3.6	3.2	3.2	80.5

		3.										82.
		8	3.0	3.3	3.4	3.2	3.3	3.1	3.5	3.3	3.5	9
Score = 82.9 = Good												
JHS	1. Natural Sciences	3.										91.
		6	3.8	3.8	3.6	3.8	3.6	3.4	3.6	3.6	3.8	3
	2. Social Sciences	3.										89
		4	3.6	3.8	3.2	3.4	3.4	3.4	3.8	3.8	3.8	89.
	3. Mathematics	3.										89.
		2	3.8	3.6	3.8	3.4	3.6	3.6	3.8	3.6	3.6	8
	4. English	3.										95
		2	3.8	3.8	3.8	3.8	3.8	4.0	4.0	4.0	3.8	95
		3.										91.
		4	3.8	3.7	3.6	3.6	3.6	3.6	3.8	3.7	3.7	3
Score = 91.3 = Very Good												
ES	1. Thematic	3.										79.
		6	2.8	3.6	3.6	3.4	2.8	2.8	3.8	2.8	2.8	9
	2. Natural Sciences	3.										87.
		2	2.6	3.6	3.8	3.6	3.6	3.6	3.8	3.6	3.6	3
	3. Social Sciences	3.										81.
		0	3.6	3.6	2.8	3.8	2.8	3.8	3.6	2.8	2.8	4
	4. Local Content	3.										76.
		2	2.6	2.6	3.6	3.8	3.6	2.6	3.6	2.6	2.6	9
		3.										81.
		2	2.9	3.3	3.4	3.6	3.2	3.2	3.7	2.9	2.9	3
Score = 81.3 = Good												

Based on Table 5, the average values of learning planning for higher education in Java, Sumatra, and Kalimantan are categorized as very good. Many factors influenced this result, especially the rapid development of internet technology illustrating learning presentation designs integrated with technology. The abundance of information and knowledge in this world motivates educators to plan effective learning to improve students' analytical power and thinking skills leading to independent learning, especially in science learning. In natural sciences learning, especially in teaching biology, educators present problem-based learning by providing factual pictures with real conditions occurring in everyday environments. The work from home (WFH) policy from the government provides educators more time to plan their learning to understand more easily and be more creative in preparing some structured tasks to train students' learning independence. Similarly, the learning planning for junior high school education in Java, Sumatra, and Kalimantan was categorized as very good. Conducting workshops,

technical training/guidance, online webinars during the pandemic period contributes significantly to increasing knowledge and experiences for educators to improve the quality of learning planning.

Meanwhile, the average value of learning planning at the high school in Java and Sumatra was categorized as very good as well, Kalimantan reached the good category. The demographic and geographical differences are some of the influential factors. The geographical areas identical with the large and long rivers and dense forests also affected internet access. For the elementary school level, the value of learning planning in Java, Sumatra, and Kalimantan was categorized as good. Educators at this educational level are challenged on how to create a fun learning design appropriate for the students' ages. Educators are required to present material online more dynamically, not a heavy psychological burden for students.

Authorities at the primary, secondary, and higher education levels are trying to figure out how to use various digital devices to continue the

compulsory distance learning process during the Covid 19 pandemic [23]. The success and effectiveness of online learning also depend on how educators to design learning, learning content, and the availability of interactions between educators and students [24]. Educators prepare digital content and develop new methods to pursue that content, while students seek to access and understand that content [25]. Students' self-

efficacy towards digital-based learning is one of the determinants of learning effectiveness in the pandemic period [26].

2. The Implementation of Online Learning

Online learning was conducted through three stages, namely introduction, core activities, and closing activities. The implementation of learning is described in Table 6.

Table 6. Learning Implementation

Descriptions of Observation Results	Java			Sumatera				Kalimantan					
	HE (%)	SH S (%)	JH S (%)	ES (%)	HE (%)	SHS (%)	JHS (%)	ES (%)	HE (%)	SH S (%)	JHS (%)	ES (%)	
Preliminary Activities	1. Conducting absence, motivating, and delivering learning objectives.	87.5	87.5	82.5	82.5	87.5	87.5	80	80	87.5	82.5	80	80
	2. Delivering apperception and appreciation, as well as materials and targeted skills achieved from learning.	87.5	85	85	90	90	90	90	80	90	90	90	80
	3. Exploring students' experiences regarding the theme presented.	70	80	80	80	80	80	80	80	70	80	80	80
	4. Creating mental readiness and attracting students' attention optimally to focus on learning delivered.	70	80	80	80	70	80	80	80	70	80	80	80
Core Activities	1. Delivering learning strategies or methods used.	80	80	80	80	70	80	80	80	80	80	80	80
	2. Using question and answer, demonstration, direct learning, practices, and assigning tasks methods.	100	100	87.5	80	92.5	87.5	80	70	92.5	87.5	85	70

	3. Taking into account all factors, namely learning objectives, characteristics/number of students, characteristics of materials, time allocation, and available facilities.	92.5	87.5	87.5	80	92.5	80	70	70	92.5	80	85	70
	4. Dividing students into groups and giving them opportunities to perform self-actualization individually and in groups.	100	87.5	87.5	80	92.5	80	70	70	92.5	80	70	70
	5. Connecting learning materials to the facts and phenomena in daily life, factual examples, and the integration into religiosity.	92.5	87.5	87.5	80	92.5	80	70	70	92.5	80	70	70
	<hr/>												
Closing Activities	1. Concluding the materials with the students.	100	100	100	87.5	100	92.5	87.5	87.5	10	92.5	92.5	87.5
	2. Evaluating by asking questions, reinforcing, and following up on the materials.	80	100	100	87.5	100	92.5	87.5	87.5	10	92.5	92.5	87.5
	3. Delivering the materials that will be discussed in the next meeting, assigning literacy.	92.5	87.5	87.5	100	92.5	87.5	87.5	100	10	87.5	87.5	100
	4. Closing the learning activities by greeting and praying.	70	87.5	92.5	100	70	87.5	92.5	100	87.5	92.5	100	100

Based on Table 6, the implementation of online learning including preliminary, core, and closing activities in Java, Sumatra, and Kalimantan shows varying percentages. For preliminary activities, the students' mental readiness aspect to

focus on the lesson indicated a lower percentage compared to other aspects. This happened at the university level in Java, Sumatra, and Kalimantan. It means that educators need to make a significant effort to create a strong mentality for students in

following the implementation of online learning well. Giving suggestions, motivation, and reinforcement for students is needed to build their mentality and self-confidence and show their existence in the learning that has been designed.

Meanwhile, the implementation of online learning for core activities in Java, Sumatra, and Kalimantan also demonstrates varying percentages. The challenge of educators is paying attention to some factors, such as learning objectives, characteristics/number of students, material characteristics, time allocation, and available facilities, especially learning in Sumatra and Kalimantan. These factors are very influential on the effectiveness of online learning. In addition, efforts to link learning materials with facts and phenomena in life and factual examples, as well as their integration in religion need to be improved as

well. Differences in students make result in students' various perspectives in examining the phenomena presented in learning. If these differences are managed properly by educators, they can produce quality thoughts and arguments for students.

3. Evaluation of Online Learning

Evaluation of online learning was carried out on each component of the learning objectives. The assessment used a non-test method, namely observing the students' motivation in the learning process. The stages of the online learning process in this study were all performed online. The students' learning motivation in online learning in this study was measured as an indicator of the evaluation of the online learning process in each different regional culture (Table 7).

Table 7. Learning Motivation

		Java	Sumatera	Kalimantan
		(%)	(%)	(%)
Indicators	1. Persevering in facing the tasks	66.34	52.28	54.18
	2. Tenacious in encountering learning difficulties	74.21	51.17	57.62
	3. Showing interest	57.52	46.90	50.12
	4. Happy to work independently	66.07	48.69	57.50
	5. Responsive to routine tasks	63.72	49.10	46.90
	6. Ability to defend opinions	62.34	48.69	46.90
	7. Ability to accept corrections	62.48	50.34	50.00
	8. Ability to solve problems	70.90	51.17	46.77
Average Percentage Index (%)		65.45	49.79	51.25
Index Category		Moderate	Low	Low

Based on Table 7, the students' learning motivation in the online learning process in Java is categorized as moderate, while Sumatra and Kalimantan are in a low category. Students Java showed perseverance, tenacity, independence, problem-solving skills, responsiveness, and a higher interest in learning. Many factors influenced these facts, including culture, facilities, and infrastructure, learning atmosphere, internet access and reach, learning readiness, and educator competencies. Improving technology infrastructure, providing responsive problem-solving services, and building strong

communication channels between management, educators and students are essential factors that need to be considered in improving the quality of online learning [27].

Overall, the comparison of online learning management during the Covid-19 pandemic on the average of all levels of education from HE, SHS, JHS, and ES in multicultural areas is described in Figure 1, while the comparison of online learning management during the Covid-19 pandemic on the average of all samples in Indonesia (Java, Sumatra, and Kalimantan) per education level is demonstrated in Figure 2.

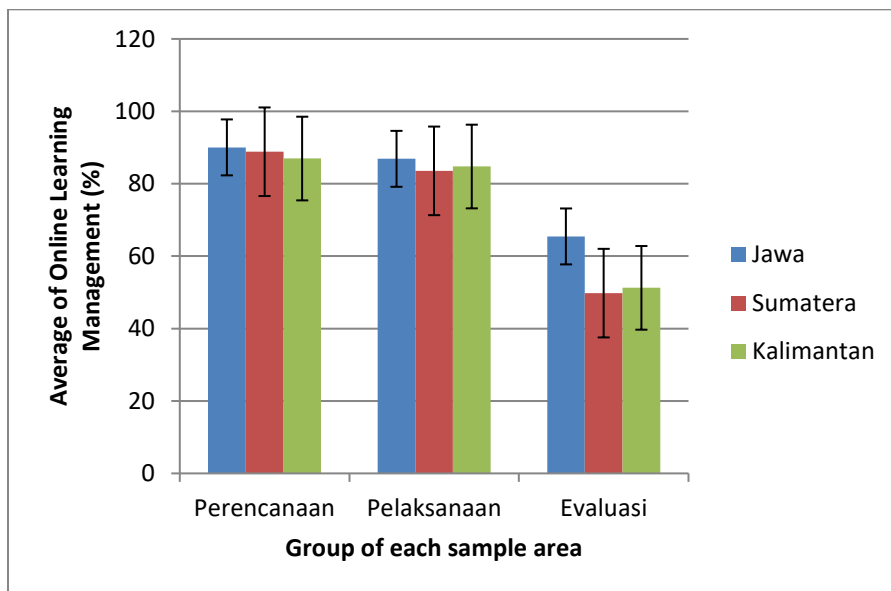


Figure 1. Comparison of online learning management during the Covid-19 pandemic based on the average of all educational levels in Java, Sumatera, and Kalimantan

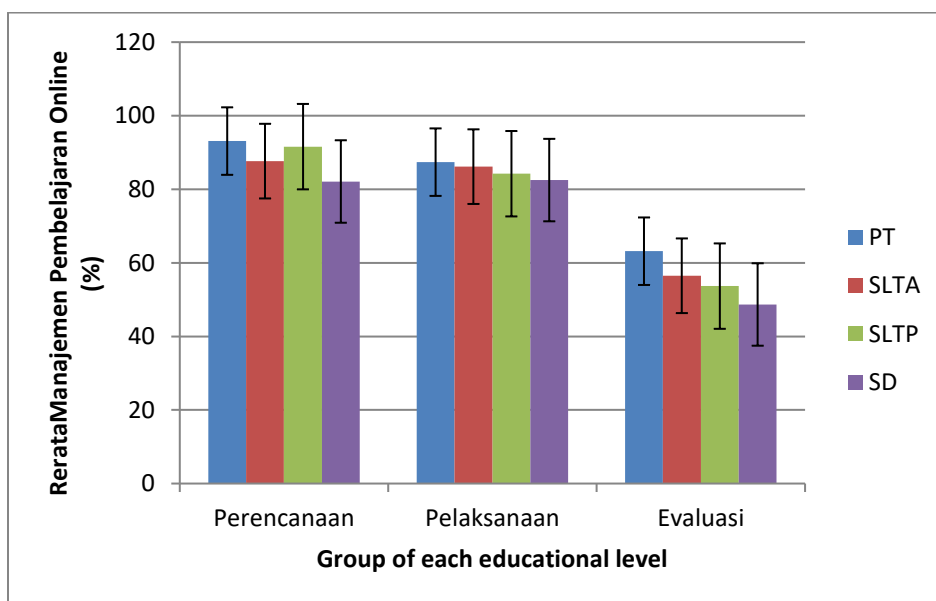


Figure 2. Comparison of online learning management during the Covid-19 pandemic based on the average areas of each educational level of HE, SHS, JHS, and ES

The Use of Online Learning Media

Data were obtained from 350 respondents, consisting of 220, 60, 40, and 30 respondents at the higher education, Senior High School, Junior High School, and Elementary School levels, respectively. Data exploration was carried out randomly in the target areas, namely Java, Kalimantan, Sumatra and was conducted online

using a questionnaire and observation sheet. The data as a whole were adjusted and grouped by data source area to find the data on comparisons of different cultures. The data were transformed using online learning media during the Covid-19 pandemic into numerical data using excel, as shown in Table 8.

Table 8. Learning Media Data

Education Levels	Learning Media										
	Whatsapp	Zoom	Google Meet	Google Form	Google Classroom	Google Drive	Youtube	Jitsi	Webex	door to door	
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	
Java	HE	16.04	58.33	35.35	46.43	44.44	38.46	45.27	0.00	52.94	0.00
	SHS	38.46	62.50	100	33.33	100	41.67	37.50	0.00	0.00	0.00
	JHS	31.58	75.00	100	42.86	100	100	36.36	0.00	0.00	0.00
	ES	66.67	100	100	100	100	0	33.33	0.00	0.00	13
Sumatera	HE	30.48	25.00	30.30	26.79	33.33	25.64	24.88	16.67	35.29	0.00
	SHS	19.23	25.00	0.00	22.22	0.00	25.00	31.25	0.00	0.00	0.00
	JHS	36.84	12.50	0.00	28.57	0.00	0.00	27.27	0.00	0.00	0.00
	ES	16.67	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	37.50
Kalimanta	HE	53.48	16.67	34.34	26.79	22.22	35.90	29.85	83.33	11.76	0.00
	SHS	42.31	12.50	0.00	44.44	0.00	33.33	31.25	0.00	0.00	0.00
	JHS	31.58	12.50	0.00	28.57	0.00	0.00	36.36	0.00	0.00	0.00
	ES	16.67	0.00	0.00	0.00	0.00	0.00	33.33	0.00	0.00	50

The use of learning media during the Covid-19 pandemic was described based on educational levels describing the dominant learning media used. The use of learning media at the Higher Education level in Indonesia in the sample areas is shown in Figure 3.

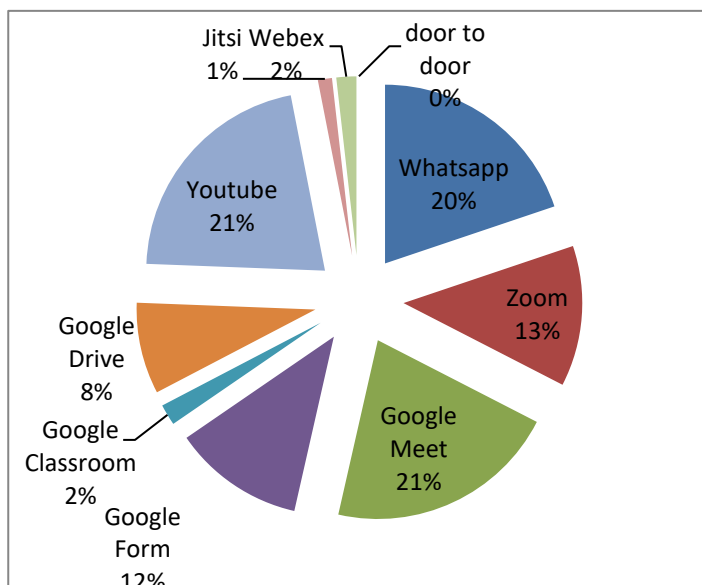


Figure 3. Use of Learning Media during the Covid19 Pandemic in Higher Education

Based on Figure 3, the dominant learning media used during the Covid-19 Pandemic at the Higher Education level include youtube, google meet and Whatsapp. Meanwhile, for the Senior High School

level, the use of learning media during the Covid-19 pandemic from selected 60 schools in Indonesia is presented in Figure 4.

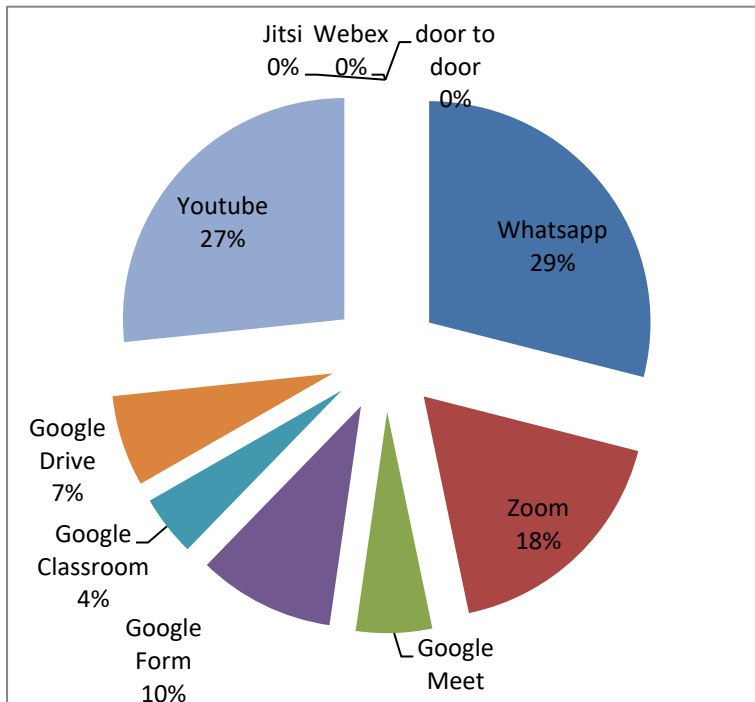


Figure 4. Use of Learning Media during the Covid-19 Pandemic at Senior High School Level

Based on Figure 4, the dominant learning media during the Covid-19 pandemic at the Senior High School level includes WhatsApp, youtube, and

zoom. Meanwhile, the use of learning media during the Covid-19 pandemic in 40 selected Junior High Schools in Indonesia is demonstrated in Figure 5.

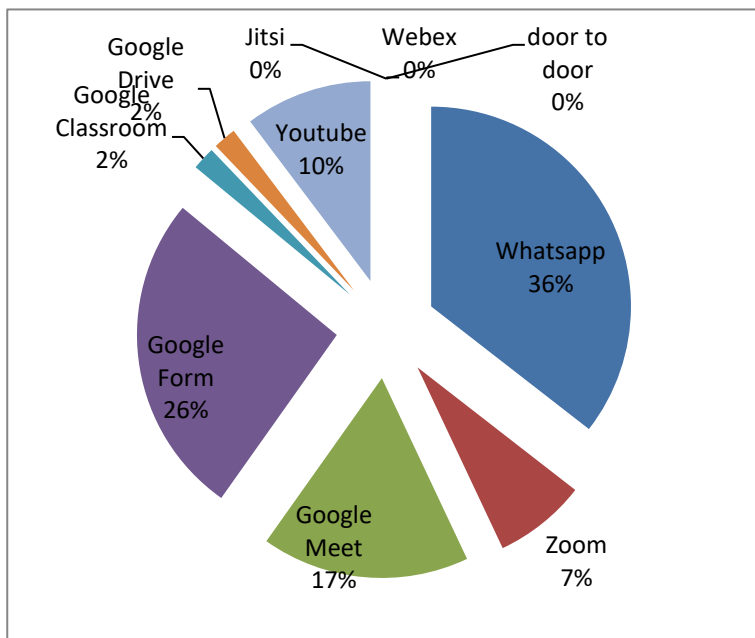


Figure 5. Use of Learning Media during the Covid-19 Pandemic in Junior High School Level

Based on Figure 5, learning media during the Covid-19 pandemic mainly used at the Junior High School level include WhatsApp, google meet, and

youtube. Meanwhile, the use of learning media during the Covid-19 pandemic at the Elementary School level in the sample areas in Indonesia can

be seen in Figure 6.

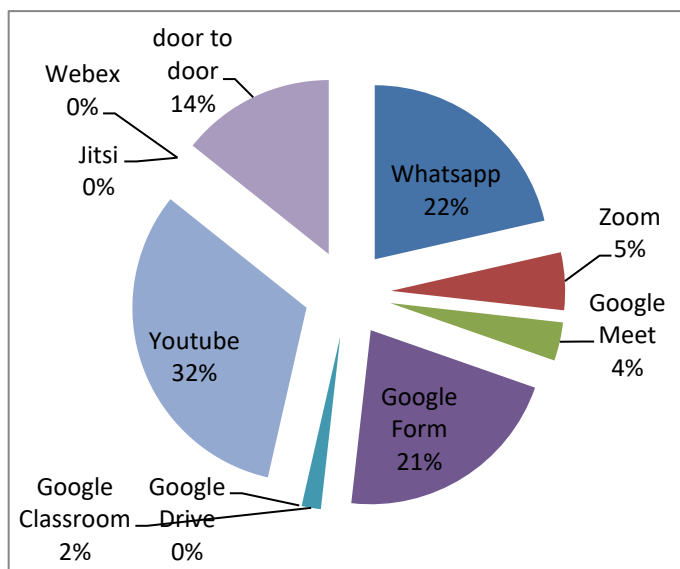


Figure 6. Use of Learning Media during the Covid-19 Pandemic at the Elementary School Level

Based on Figure 6, it is known that the dominant learning media during the Covid-19 pandemic at the elementary level include WhatsApp, youtube, and Google Forms. Under these circumstances, learning during a pandemic is reaching so many priorities in the education system; media such as Zoom, Google Meet, video communication systems, have gained great popularity [28]. The results of grouping data on online learning media users show that all levels of education are considered quite ready to carry out online learning.

The effectiveness of the use of learning media can be viewed from the comparison of the average semester scores or the Grade Point Average (GPA) before and after the pandemic. This study explored the effectiveness of using learning media during the pandemic on 350 students distributed to 220 students at higher education level for the Biology Education, Physics Education, English Education, and Arabic Education Study Programs. The distribution of the questionnaire was projected to 80, 70, and 70 respondents at universities in Java, Sumatra, Kalimantan, respectively. Data on the use of online learning media at the Senior High School level was provided to 60 students with the distribution of 20 respondents in each of Java, Sumatra, and Kalimantan. The subjects used as data sources at

the high school level were Biology, Mathematics, Physics, and Chemistry. Data on the use of online learning media at the Junior High School level was given to 40 respondents. The distribution of the questionnaire was provided to 16, 12, and 12 respondents at Junior High schools in Java, Sumatra, Kalimantan, respectively. The subjects used as data sources at the Senior High School level are Natural Sciences, Social Sciences, Mathematics, and English. Data on the use of online learning media at the Elementary School level was distributed to 30 students, with a distribution of 10 respondents each in Java, Sumatra, and Kalimantan. The subjects used as data sources at the elementary level are thematic subjects, natural sciences, social studies, and local content. Data exploration in three regions with different regional characteristics aimed to compare the implementation of online learning between different cultures in Indonesia. Do cultural differences and multiculturalism that are typical in Indonesia affect the selection and use of online learning media during the Covid-19 outbreak, so that they have an impact on the effectiveness of learning? The effectiveness of using online learning media during the pandemic is presented in Table 9.

Table 9. Effectiveness of the Use of Online Media Learning during the Pandemic

Education al Levels	Departments/Subjects	Average scores/ Semester GPA before Pandemic (Pre)	Average scores/ Semester GPA after Pandemic (Post)	Gain	N- Gain Score	N- Gain Score (%)	
Jawa	HE	1.Biology Education	3.95	3.97	0.02	0	0.02
		2.Physics Education	3.58	3.61	0.03	0	0.03
		3.English Education	3.87	3.94	0.07	0	0.07
		4.Arabic Education	3.80	3.91	0.11	0	0.11
			3.80	3.90			
	SHS	1.Biology	89.1	89.4	0.30	0.03	2.75
		2.Physics	82.9	79.9	-3	-0.18	-17.54
		3.Mathematics	80.3	81.8	1.5	0.08	7.61
		4.Chemistry	84.6	81.5	-3.1	-0.2	-20.13
			84.23	83.15			
	JHS	1. Natural Sciences	86.6	86.7	0.1	0.01	0.75
		2. Social Sciences	86.7	88.0	1.3	0.1	9.77
		3. Mathematics	83.5	80.7	-2.8	-0.17	-16.97
		4. English	88.4	88.9	0.5	0.04	4.31
			86.30	86.08			
	ES	1. Thematic	88.3	84.3	-4	-0.34	-34.19
2. Natural Sciences		88.9	85.5	-3.4	-0.31	-30.63	
3. Social Sciences		89.5	89.4	-0.1	-0.01	-0.95	
4. Local Content		90.7	91.6	-0.9	0.1	9.68	
		89.35	87.70				
Sumatera	HE	1.Biology Education	3.87	3.90	0.03	0	0.03
		2.Physics Education	3.59	3.58	-0.01	0	-0.01
		3.English Education	3.66	3.68	0.02	0	0.02
		4.Arabic Education	3.71	3.72	0.01	0	0.01
			3.71	3.72			
	SHS	1.Biology	88.8	88.9	0.10	0.01	0.89
		2.Physics	82.2	81.3	-0.9	-0.05	-5.06
		3.Mathematics	86.6	84.2	-0.4	-0.03	-2.6
		4.Chemistry	81.5	80.5	-1	-0.05	-5.41
			84.28	83.73			
	JHS	1. Natural Sciences	82.9	81.4	-1.5	-0.09	-8.77
		2. Social Sciences	84.3	84.9	0.6	0.04	3.82
		3. Mathematics	81.8	79.7	-2.1	-0.12	-11.54
		4. English	82.2	80.8	-1.4	-0.08	-7.87
			82.80	81.70			
	ES	1. Thematic	85.6	82.5	-3.1	-0.22	-21.53
2. Natural Sciences		84.1	83.7	-0.4	-0.03	-2.52	
3. Social Sciences		86.6	84.5	-2.1	-0.16	-15.67	
4. Local Content		87.4	85.7	-1.7	-0.13	-13.49	
		85.93	84.10				

Kalimantan	HE	1. Biology Education	3.80	3.87	0.07	0	0.07
		2. Physics Education	3.64	3.72	0.08	0	0.08
		3. English Education	3.79	3.80	0.01	0	0.01
		4. Arabic Education	3.72	3.80	0.08	0	0.08
			3.74	3.80			
	SHS	1. Biology	88.0	88.9	0.9	0.08	7.50
		2. Physics	83.7	82.2	-1.5	-0.09	-9.20
		3. Mathematics	84.0	83.7	-0.3	-0.02	-1.87
		4. Chemistry	83.0	82.7	-0.3	-0.02	-1.76
			84.68	84.38			
	JHS	1. Natural Sciences	81.8	80.5	-1.3	-0.07	-7.14
		2. Social Sciences	85.9	86.0	0.1	0.01	0.71
3. Mathematics		82.9	81.3	-1.6	-0.09	-9.36	
4. English		84.9	85.7	0.8	0.05	5.3	
		83.88	83.38				
ES	1. Thematic	86.1	80.5	-5.6	-0.4	-40.29	
	2. Natural Sciences	88.2	77.0	-11.2	-0.95	-94.92	
	3. Social Sciences	88.7	79.6	-9.1	-0.81	-80.53	
	4. Local Content	86.7	87.1	0.4	0.03	3.01	
		87.43	81.05				

Based on Table 9, the effectiveness of using online learning media during the pandemic for higher education levels in Java, Sumatra, and Kalimantan quite improved. The learning outcomes before the Covid-19 pandemic and the semester during the Covid-19 pandemic increased because the students' adaptability was quite fast by adjusting learning patterns by utilizing online learning media, such as youtube, google meet, WhatsApp, zoom. However, the different backgrounds of students in Java, Sumatra, and Kalimantan led to various increases in student learning outcomes. Meanwhile, the average learning outcomes of students at the Senior High School, Junior High School, and Elementary School levels in Java, Sumatra, and Kalimantan decreased when compared to learning outcomes before the pandemic. The differences in learning outcomes of students in Java, Sumatra, and Kalimantan were quite significant at the elementary school level. This condition was caused by technical barriers faced by teachers, student conditions, the readiness of facilities and infrastructure, and internet network access. The large number of elementary schools spread across the Java, Sumatra, and Kalimantan islands with different geographical conditions is a challenge for educators, schools, and the government to provide

online learning quite easily accessible. However, cultural differences in Indonesia have not had an impact on school commitments to implement online learning.

The current internet era facilitates students to grow into digital citizens [29]. The educators must possess basic quality skills for time management, readiness for computers and other IT applications for the effectiveness of online learning [30]. The online teaching and learning tools, such as zoom, Webex, google meet, google form, WhatsApp, Youtube, and other applications are sufficient to help students feeling a lack of material [31]. Online learning has a positive effect in encouraging students to be more independent and think critically [32]. The pandemic period also positively impacts the educators' expertise in using educational technology and the development of more professional learning [33]. The effectiveness of online learning can be seen in the extent of communication in online learning, the educators' ability to encourage the process of interest and motivation to learn during online learning, and the competencies arising from the online learning process [34].

The COVID-19 pandemic is the biggest challenge facing the national education system today [46]. The development of education

provision at all levels has undergone a significant shift from face-to-face teaching to online teaching. Arnott and Yelland [47] conceptualise digital technology as social, cultural, and personal artefacts that inhabit the world of contemporary children's lives and contribute to their learning. However, it is unfortunate that teaching materials do not accompany them under the prevailing conditions. Teachers must provide comfort to students [48] wherever they study at school or home, and they can access teaching materials anytime and anywhere. Even after the pandemic ends and returns to normality, it will not be simple to return to the old life. Educators must take precautions against the second and third waves of the COVID-19 outbreak. The expansion of online learning in schools will be accelerated further, and schools will organise themselves systematically to pursue aspects of technology-based learning. Internet technology and mobile phone have changed the education system from traditional to modern. Technology in education benefits not only students but also teachers in delivering lessons and making classrooms more enjoyable and learning available at all times [49]. Laderman states that because of the COVID-19 pandemic, teachers and students alike are in a situation where they feel compelled to embrace digital academic experiences to summarise the online learning process [50].

Learning flexibility can enhance students' learning motivation. However, poor internet connectivity, high data costs, inadequate IT tools, inability in time management, and the carrying capacity of the surrounding environment are inhibiting factors affecting educators in preparing online learning well [35]. Effective online learning requires improvements of reliable and affordable internet, implementation of proper infrastructure, advancement of technology, and provision of well-guided technical support to be utilized well. This improving innovative learning process is for successful learning during a pandemic [36]. Educators and learners must adapt quickly to be involved in online learning [37].

Environmental differences in various urban and rural areas, as well as family backgrounds, have a dominant impact on how to view the problems faced in learning during a

pandemic [38].

Someone highly motivated and enthusiastic will play an active role in the process of successful learning [39]. The environment and support from family members also influence the students' concentration in online learning [40]. This phenomenon is more appealing during a pandemic where most family members gather at home within a long period.

The challenge is that educators are hard to evaluate, especially in finding the authenticity of the learning assignments that have been given. Parents guide and educate their children with varying levels of support [41].

CONCLUSION

The results of grouping data on online learning media users showed that all educational levels were considered quite ready to carry out online learning. The cultural differences in Indonesia have not had an impact on school commitments to conduct online learning during the Covid-19 outbreak.

Corry, & Carlson-Bancroft [42] stated that the benefits of online learning include (a) expanding students' access to develop knowledge and insight globally, (b) increasing student involvement to be motivated in finding learning resources quickly, flexibly, dynamically accessible based on the needs, (c) providing a learning environment suiting the students' needs. Prasasti [43] stated that technology media was beneficial for teachers and students to access learning materials and interact directly inside and outside classroom learning through online media. However, online learning will not be effective if digital equipment and skills, the internet, and related resources are unavailable [44]. Likewise, Bazimaziki [45] reported that the situation is getting worse for some students living in rural areas without internet and electricity facilities.

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