



The Phenomena of Learning Loss Experienced by Elementary School Students during the Covid-19 Post Pandemic

I Wayan Kertih ¹, I Wayan Widiana ^{1*}, I Gede Wahyu Suwela Antara ¹

¹ Universitas Pendidikan Ganesha, Singaraja, Indonesia.

Abstract

The COVID-19 pandemic caused most students to experience learning loss after joining online learning for almost 2 years. Learning loss is a student's condition experiencing learning setbacks academically due to the factors of the non-sustainable educational process. The study aimed at analyzing the learning loss phenomenon experienced by elementary school students in the COVID-19 post-pandemic situation. The study used a descriptive qualitative approach. The population of the study was 401,321 distributed students, and the sample was gained through conducting two sampling techniques, such as random cluster sampling and accidental sampling, with a final sample of 1,104 students. The data collection methodologies conducted were interview, observation, and questionnaire. The questionnaire used contained 15 questions that had been validated before. The data analysis of the study was conducted interactively using 3 techniques, such as data reduction, data display, and drawing conclusions. The descriptive analysis was conducted by using the Guttman scale with the percentage statistic technique. The result of the study showed that there were learning loss phenomena in the post-pandemic situation, a condition seen from the researched dimensions in the low and medium categories. Moreover, a high level of learning loss was found in the rural area. This was observed from several things, such as the learning facilities provided, the parent's role, and the learning methodologies conducted. To resolve learning loss, we need to participate all parties in the learning process, which in this context means mending a good relationship with the community and parents to improve the learning quality, which is assisted with innovative learning models.

Keywords:

Learning Loss;
Covid-19 Post-Pandemic Situation;
Online Learning;
Elementary School.

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1- Introduction

The Coronavirus 2019 Pandemic (COVID-19) is a phenomenon where a coronavirus was spread globally in 2019. The COVID-19 first cases started in China and over time spread to each country in Asia, Europe, America, and Africa [1]. The COVID-19 virus has infected almost more than 285 million people around the globe and taken the lives of almost more than 5,4 million at the end of 2021 [2, 3]. The virus is caused by a new variant of the coronavirus called SARS-CoV-2 [4]. The infection begins with fever, tiredness, dry cough, and dyspnea and is sometimes assisted by gastrointestinal symptoms [5]. COVID-19 usually appears as an acute respiratory tract infection and is diagnosed mostly with pneumonia viruses, such as influenza, parainfluenza, adenovirus infection, syncytial respiratory infection virus, metapneumovirus infection, and atypical pathogens, such as Mycoplasma pneumonia infection and Chlamydomphila pneumonia infection [6]. COVID-19 creates challenges in all fields, including health [7, 8]. COVID-19 infects humans fast through direct or indirect physical contact, depending on the patient's immunity [9]. The new coronaviruses in the context of COVID-19 have changed social life globally [10–12]. The COVID-19 pandemic has an impact on both the economy and education. These days, the government begins to conduct activities to prevent the spread of COVID-19 by

* **CONTACT:** wayanwidiana85@undiksha.ac.id

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conducting social distancing and physical distancing [13, 14]. One regulation run by the government is online learning, and other activities such as seminars, workshops, conferences, and many others are postponed or even canceled [15–18].

Online learning is one solution that can be conducted in the learning process these days, because online learning gives the students the same learning materials they should get without being in the same room. Online learning becomes a hot topic to discuss, even though at first there were pros and cons to conducting this method with children, which were assumed to be a disturbance to the children's social and emotional development, a lack of social interaction, and a danger to their health and growth [19, 20]. A different view is emerging from many education experts: online learning will help students understand abstract materials and develop collaborative learning, reasoning, and problem-solving skills [21]. From many perspectives, it can be concluded that online learning should be studied deeper and prepared more so that the learning process can be achieved. Online learning is done assisted by the internet, synchronously or asynchronously, which gives opportunities for the students to interact with the educators/environment, and peers as the learning sources [22]. The presence of online learning gives students opportunities to share opinions and learn more independently with no time and space limits, as well as being more flexible [23–26]. Online learning needs the students' ability to use technology and support to make the learning atmosphere more conducive and form good social interaction [27]. In addition to the ability, of course, online learning must also pay attention to the financial conditions of students and the facilities and infrastructure that support it [28]. According to the explanations, the online process during COVID-19 has an effective role in the learning process.

According to various studies, many online learning impacts exist, such as students experiencing mild anxiety during the Covid-19 [29]. Other states indicate that there is an additional internet quota, internet network disturbances, limited technology mastery, and the completeness of the subject matter does not match the curriculum achievement [30]. Another result states that the online learning implementation has a less supportive internet connection [31]. The other research states that there is internet connection disturbance, the students are less excited about following online learning, there are facility limitations that make it difficult for students, and there are expensive internet quotas [32]. Additionally, other states indicate that students feel bored following the learning process [33]. Other sources also state that students who are not used to using a smartphone or computer experience decreased learning motivation and do not pay attention to the learning process [15]. The other states that there is a social isolation attitude and less interactivity, participation, and feedback. The unreadiness of parents in facing online learning, less formal situations during the learning, and less social interaction between students [22, 34]. Moreover, many students do not conduct online learning, yet do other things, such as playing games, using social media, and mostly watching YouTube and other activities, showing an addiction to "gadgets" [35–37]. Therefore, online learning does not only have a positive impact but also a negative impact on the process of learning if it is not conducted well and supported with proper facilities.

Learning that is not supported by facilities and that is not well conducted will be impactful to the delay the learning process, which we know as learning loss. *Learning loss* is a setback in academic progress, most often because there is an extended gap or discontinuity in the students' education [38–41]. *Learning loss* is a phenomenon in students who experience a decrease in time spent learning and a loss of motivation to study [42–44]. *Learning loss* is mostly experienced by students who live in rural areas and is less common in the city. *Learning loss* is impactful on the quality of education; therefore, the condition must be treated quickly to not worsen the Indonesian education situation. *Learning loss* is a phenomenon where students experience a decrease in time consumed in learning and a loss of learning motivation [42, 43]. *Learning loss* is caused by one of which is the Covid-19 pandemic. The lack of learning support and home activities, as well as technology access, makes a huge difference in learning [45]. Several researchers state that students experience learning setbacks during the pandemic [46]. The learning result states that there is a substantial setback in the Learning Adjusted Years of Schooling (LAYS), with the consequences being worse for female students than male students [46]. The relatively short lockdown (which is 8 weeks) in the Netherlands is estimated to result in a loss of learning equivalent to 20% of the school year and even more for students from disadvantaged families [47].

Several previous studies have examined the various impacts of the COVID-19 pandemic on the decline in the quality of learning experienced by students. In research conducted in the USA, projections have discussed that students will experience a learning loss of up to 27% in reading and a 50% learning loss in mathematics compared to a typical pre-pandemic school year [48]. Research states that the lack of student participation, limited use of mathematics teaching methods by teachers, socioeconomic status of the family, and lack of cooperation with teachers are some of the causes of the loss of mathematics learning [49]. Research suggests that by 2020, Grade 2 students will lose between 57% and 70% of their years of study relative to their pre-pandemic peers, and children with stronger early reading skills are more negatively impacted by the pandemic [44]. Research suggests that Early Grade reading in Ethiopia, Kenya, Liberia, Tanzania, and Uganda shows a learning loss of half to more than a year, and learning deficits for children in grade 3 can cause 2.8 years of learning loss in grade 10 [43]. So, the results of this study indicate that the existence of a pandemic causes learning loss. This condition can be seen in the learning outcomes of students and the low literacy of students. This condition is supported by the results of observations made in elementary schools in Bali, the results of which found that there was still a lack of participation or involvement of students in learning, such as asking or answering questions, solving problems, or students being less active in discussions. Observations were also made to obtain information about

the learning tools used by the teacher when carrying out learning so that they could find out the needs of the learning tools provided to the teacher. Furthermore, interviews were conducted, with the results showing that students lack enthusiasm and responses when participating in online learning. In addition, the lack of students' understanding of the material presented by the teacher resulted in low student learning outcomes. Learning outcomes can be seen in the affective, cognitive, and psychomotor aspects.

Based on the research results, it can be concluded that during the pandemic and the learning process conducted online, learning outcomes experienced degradation and literacy competence did not match expectations, and many students lost their chances of learning, mostly quitting due to limited facilities or their parents' financial condition. The COVID-19 reduction has made the educational process breathe a sigh of relief because the learning process has been carried out offline again while still carrying out health protocols. With this condition, it is necessary to conduct an analysis again to determine the condition of learning loss after the COVID-19 pandemic. Knowing the condition of learning loss will give us an idea of what solutions we can implement to reduce the level of learning loss that occurs.

2- Methodology

The study is conducted using descriptive research. Descriptive research is research that systematically explains a phenomenon, event, or sequence based on the circumstances or phenomena that occur [50]. In descriptive research, a researcher does not conduct manipulation or give certain treatments; thus, all events/phenomena are based on reality and a wide population [51]. Qualitative descriptive research aims to obtain data without any manipulation or other treatment [52]. Descriptive research was conducted to obtain information about the phenomenon of learning loss in elementary school students after the COVID-19 pandemic. This research was conducted in 3 stages, namely the research preparation stage, the research implementation stage, and the final stage [53]. The flowchart of the research procedure is presented in Figure 1.

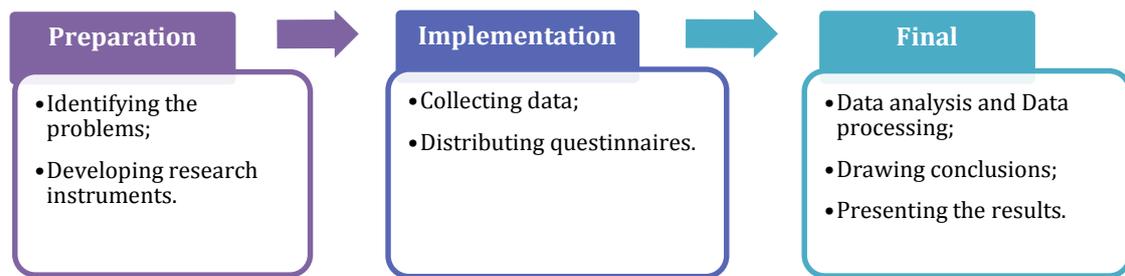


Figure 1. Research flowchart

The research sample will be able to show how far the sample can be useful for conclusions. Therefore, based on the opinions of the two experts, it can be concluded that the sample is part of the population and is related to the number and characteristics of the population. Sampling in this study was carried out using *cluster sampling*. *Cluster Sampling* is a sample selection procedure that probably involves selecting a sub-population called a *cluster*, and then each element in the group is selected as a member of the sample [51]. In the present study, 401.321 elementary school students would be clustered into 9 regencies in Bali. After being clustered, 3 out of 9 regencies were chosen, such as Denpasar City, Buleleng Regency, and Bangli Regency. The selection of the 3 regencies was based on the consideration that these three regencies were able to represent the other 9 regencies. Furthermore, the 3 sample regencies were clustered again based on urban, suburban, and village areas. The next step was to determine the number of samples using the Slovin formula with an error tolerance limit of 3%, because the number of research populations is quite large with various variations. From the results of the calculation of the Slovin formula above, the calculation results were 1,104.2, which was then rounded to 1,104. This means that from 180,654 students, 1,104 were taken as samples. The 1,104 students were then divided into 9. The division of the number of students per cluster was done by dividing the number of students per cluster by the total number of students, then multiplying by the number of samples. Furthermore, students who will be used as research samples are selected using the accidental sampling technique, where the students who are used are those who are willing to participate in the research [54].

The data collection method is defined as the method used by researchers to collect the data needed for research [55]. Data collection methods can be divided into two categories: test and non-test methods. The test method is defined as an objective measurement method regarding a person's behavior so that it can be judged to be described using numbers, scales, or a category system, while the non-test method is a method used to measure progress in learning outcomes or learning problems experienced by students and used to evaluate learning outcomes on psychomotor aspects, attitudes, or values [56, 57]. In this study, data relating to the phenomenon of learning loss are needed in elementary school students after the COVID-19 pandemic during the five pandemics, so the method chosen was a non-test method in the form of a questionnaire instrument. The questionnaire is one of the collection techniques carried out without going through the interview process with respondents. The dissemination of questionnaires aims to find

complex and relevant information about a problem to be studied [51]. This study used a questionnaire with the Guttman scale. The Guttman scale is a scale that only provides two alternative answers, such as "yes-no", "never-never", and others, so that if the individual agrees on certain questions, then the individual also agrees on other weaker questions [58, 59]. The questionnaire used in this study was a questionnaire given to students. Student questionnaires consisted of nine positive statements and six negative statements, which were then grouped into three dimensions: namely Learning and Intellectual Achievement, Psychological and Psychosocial, and Gaps in children's access to learning. The research instrument grid is presented in Table 1.

Table 1. Instrument Grid

No.	Dimension	Indicators
1	Learning Achievement and Intellectual	Students learning outcomes
		Slow in learning
		Material mastery
2	Psychological and psychosocial	Effort in learning
		Engagement in learning
		Orderly in learning
		Orderly finishing tasks
		Students' interest in following the learning
		Students' relationships with teachers and friends
3	Gaps in students' learning access	Independence in following the learning
		Persistent in following the learning
		Interest in learning media
		The difficulty level of the evaluation instrument

After the research instrument was made, the validity stage was carried out with the following steps: 1) compiling a grid of instruments; 2) consulting with supervisors; and 3) compiling research instruments. Testing the validity of the contents of the questionnaire instrument used the CVR formula. The CVR result from the calculation of each instrument item was 1, and the total CVR of all research instrument items for students was 15, which can be declared valid based on the validation provisions of each instrument item in the CVR formula. Testing the validity of the contents of the questionnaire with the help of SPSS obtained 0.85 results, where this value was then classified as very strong. Testing the reliability of the questionnaire with the help of SPSS, we obtained the results of the analysis with a Cronbach's alpha value of 0.81, which means that the developed questionnaire is very reliable.

In addition to questionnaires, the data collection method used was interviewing. The interviews were conducted using interview guidelines developed from the indicators you want to know, which in this case is the phenomenon of learning loss in elementary school students in the COVID-19 post-pandemic situation. The question relates to the student's condition as seen from the affective, cognitive, and psychomotor aspects. Therefore, the indicator was packed into 10 questions answered by the teacher. The data collection method used was observation. Observations were carried out simultaneously with the interview process. In the observation process, several indicators related to student activity and involvement in the learning process were observed. The learning process was related to the planning and implementation of learning, and observations related to learning innovations used in the learning process. To complete the data, documentation related to the results of the midterm test was carried out. This data was used to support the results of the study.

Data analysis in the research was carried out interactively [60], and activities in qualitative data analysis are carried out interactively and take place continuously until they are completed. That is, in data analysis, researchers are directly involved in explaining and concluding the data obtained by linking the theory used. Interactive model data analysis consists of three main things, namely data reduction, data presentation, and conclusion drawing (verification), with explanations: 1) Data reduction. Data reduction is a process of selecting, focusing on simplification, abstracting, and transforming raw data that emerges from written notes in the field. During the data collection, the next reduction stage took place (summarizing, coding, tracing themes, creating clusters, creating partitions, and creating memos). 2) Presentation of data. Data is a set of structured information that allows for the possibility of drawing conclusions and taking action. Good presentations are a major means of validating qualitative analysis, including various types of matrices, graphs, networks, and charts. 3) Drawing conclusions. The final stage contains the decision-making process that leads to the answers to the research questions posed and reveals the "what" and "how" of the research findings. The descriptive data analysis technique is a method of data processing that involves a calculation process by systematically compiling data in the form of numbers or percentages that are related to the researched object [56, 61]. In this study, descriptive analysis was carried out using the Guttman Scale with percentage statistical techniques to calculate the frequency of answers of all respondents on each research sub-indicator [62]. Furthermore, the percentage results are converted into Table 2.

Table 2. Percentage Grade Categories

No.	Percentage of interval limit	Grading category
1	0-20	Extremely Low
2	21-40	Low
3	41-60	Average
4	61-80	High
5	81-100	Extremely High

3- Results and Discussion

3-1- Results

Respondents in the study have different characteristics, such as age differences, gender differences, amounts of parental income, and school addresses. These characteristic differences would be able to assist researchers in analyzing research results, and the research results obtained would be more varied. Based on the characteristics of respondents based on the sex of students, it can be seen that the number of male students who contributed to the study was 564, with a percentage of 51%, while female students were only 540, with a total percentage of 49%. Therefore, it is known that the number of male student respondents was higher than the number of female students. The research was conducted by distributing 15 statements regarding the phenomenon of learning loss to elementary school students after the COVID-19 pandemic in the form of a questionnaire to 1,104 students in 3 different regencies, namely Buleleng Regency, Bangli Regency, and Denpasar City. The number of questionnaires distributed in this study was 1,104, according to the number of samples. With the number of questionnaires returned and containing student responses, namely 1,104, this means that the percentage of students who filled out the questionnaire was 100%. The results of the study were analyzed based on three dimensions of the learning loss phenomenon in elementary school students after the COVID-19 pandemic, which consisted of the dimensions of Learning and Intellectual Achievement, Psychological and Psychosocial, and Gaps in children's access to learning. Based on the results of the data analysis, it was found that learning loss in elementary school students after the COVID-19 pandemic in online learning for elementary school students in Bali province could be grouped into 2 categories, namely the medium and low categories. These results are more fully presented in Figures 2 to 5.

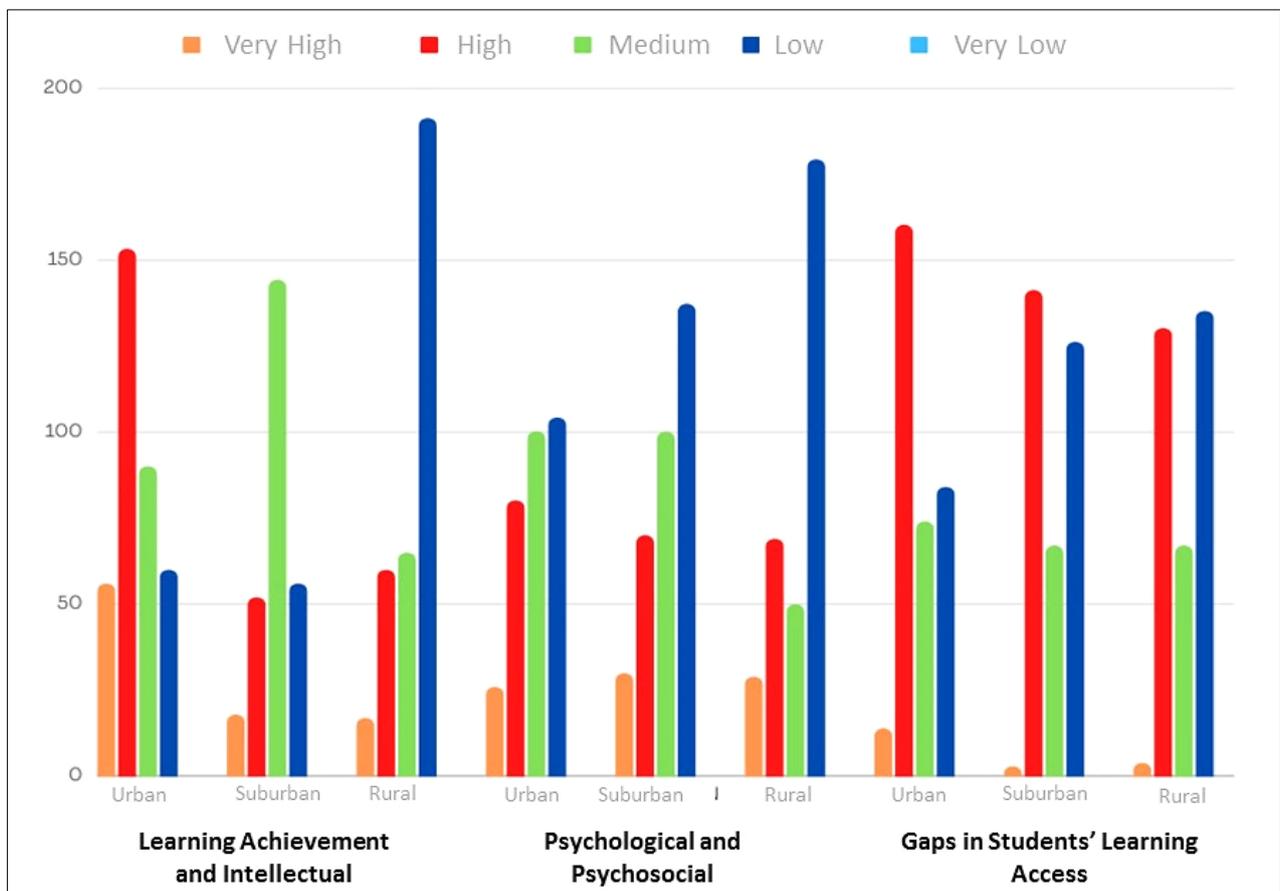


Figure 2. Post-Pandemic Learning Loss Category Recapitulation

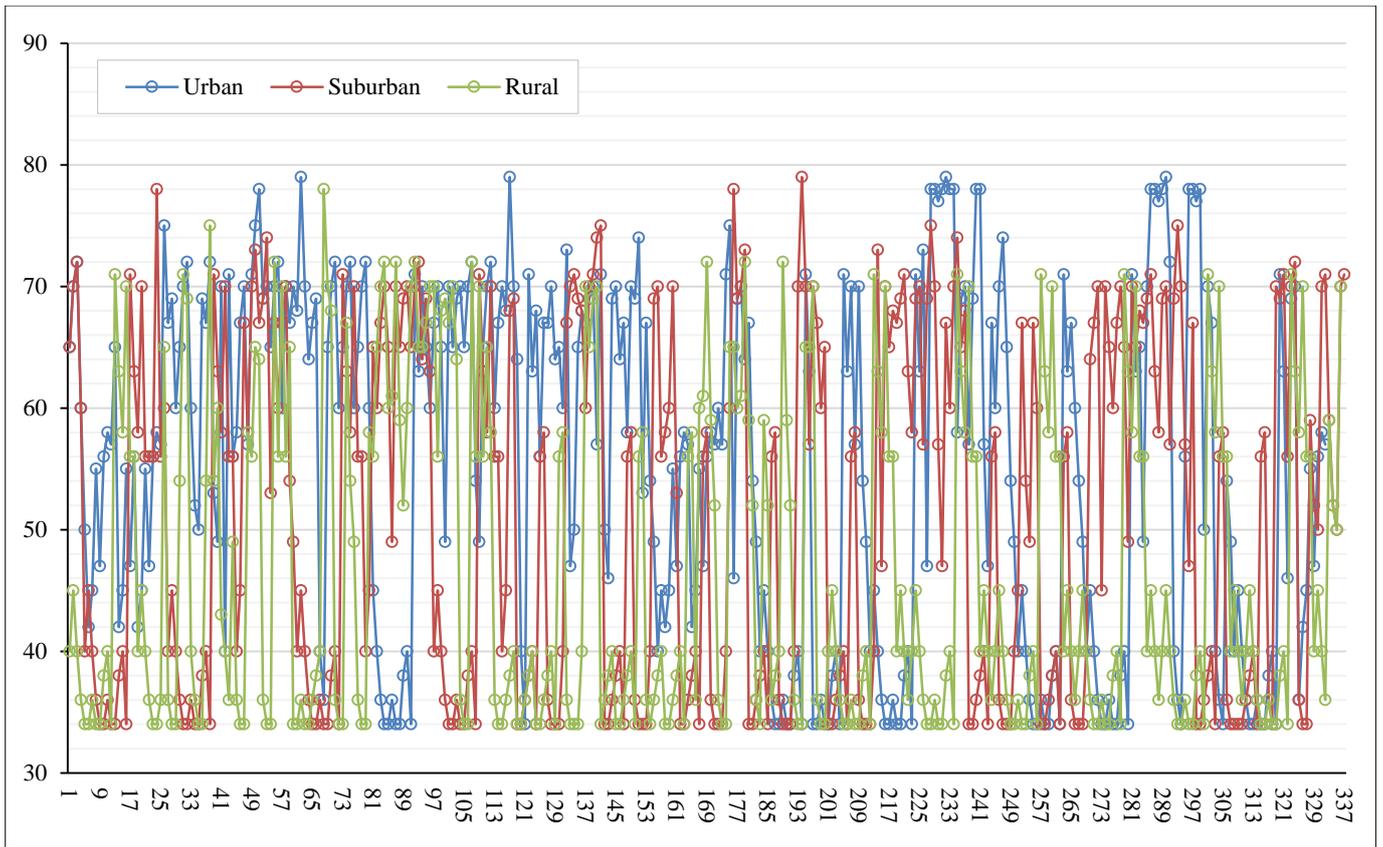


Figure 3. The graphic of learning loss learning achievement dimension

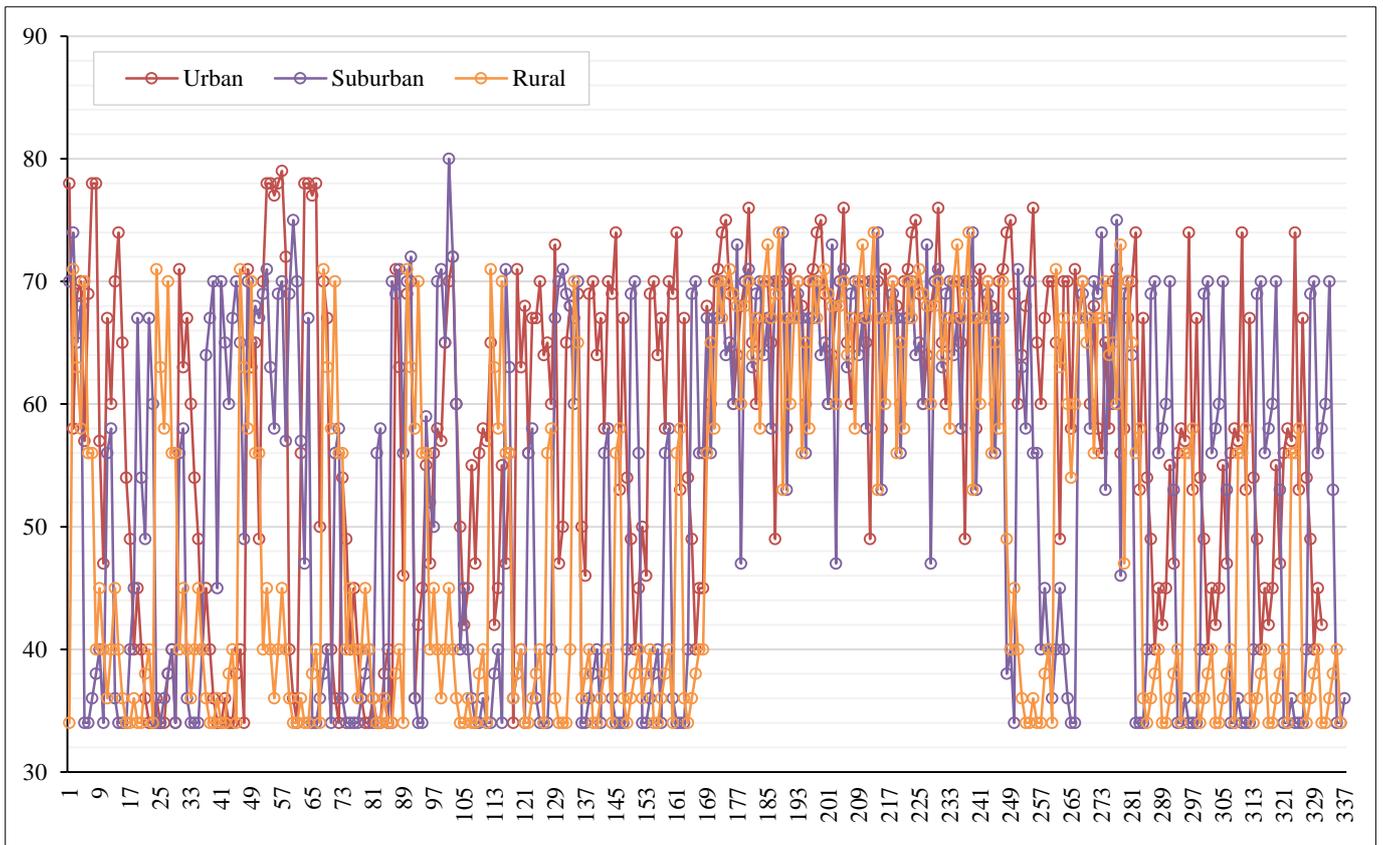


Figure 4. The graphic of learning loss of psychology and psychosocial dimensions

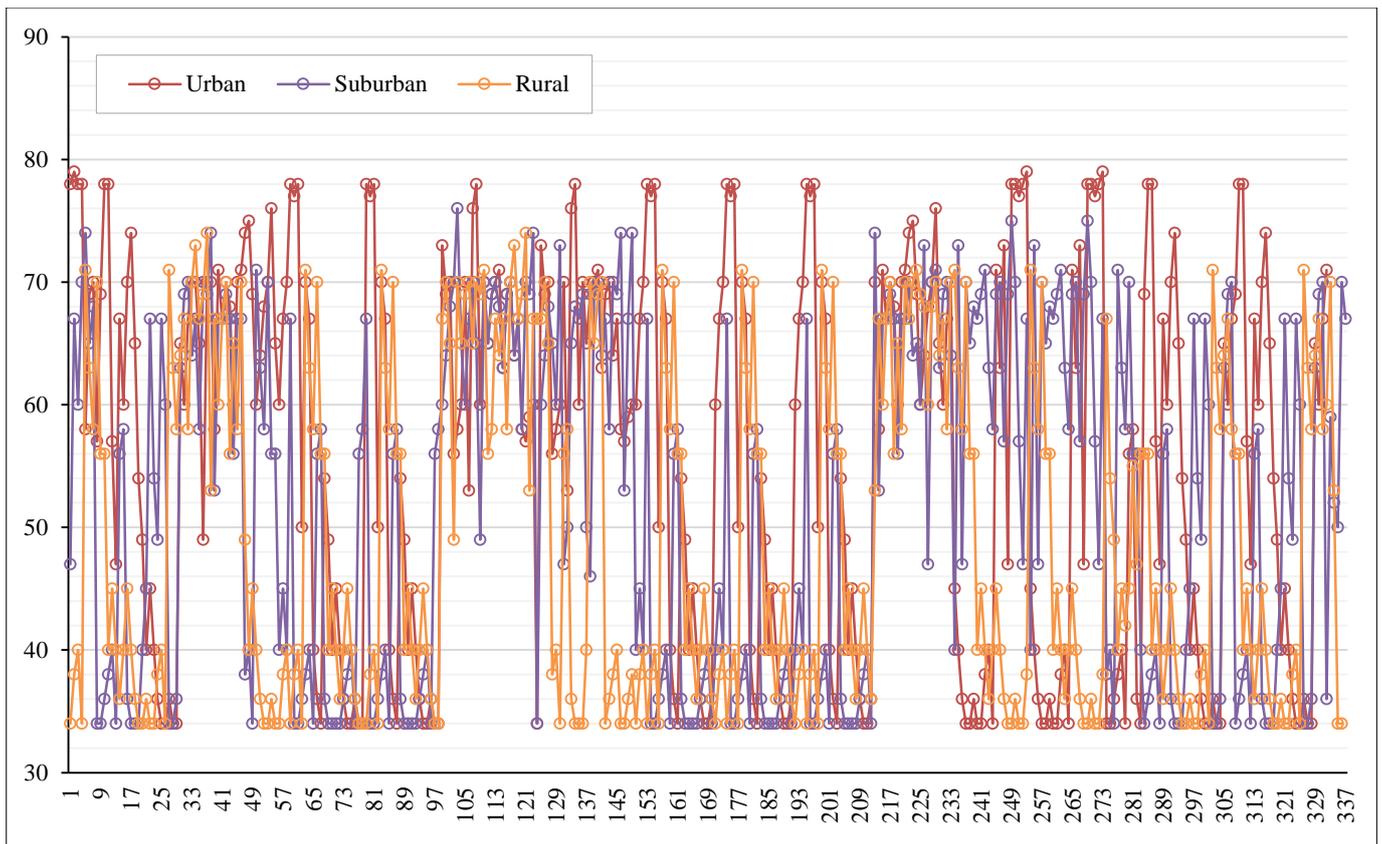


Figure 5. The graphic of learning loss in the learning access gap dimension

Based on Figures 2 and 3, the learning loss condition on the dimension of Learning Achievement and Intellectual from three area clusters showed the pictures of learning achievement showing low score category between 24.5-41.6, especially in the rural areas. The condition was supported by the interview research conducted with the teachers. The result reveals that students' achievement experienced degradation during online learning since students in rural areas did not have proper facilities during the learning process. In addition, the offline learning process in the post-pandemic period experienced problems where elementary students in grades 1 and 2 experienced learning difficulties because the basic literacy skills (reading, writing, and counting) were still not good or following the learning objectives. Therefore, in higher grades, many students are still not fluent in writing and arithmetic. This condition certainly had an impact on learning outcomes.

The results in Figures 2 and 4 reveal that students' psychology and psychosocial development also experienced the same problems with the students' achievement, where both the conditions of the elementary school students in the city, suburbs, and rural areas are in the categories of low, average, and high. The data states that the rural area had the highest number of low categories compared to the other two regions. This condition was certainly inseparable from how the learning process was carried out before going offline. The learning process carried out limits students ability to meet and work together with friends. Therefore, during offline learning, students were still adjusting to cooperating, and no less important, during the online learning process, students usually worked on assignments individually, which of course had an impact on the psychosocial aspects of the students. This condition followed the results of observations carried out where, during the learning process, students were cool on their learning in groups, and another problem was that students did not play an active role in the learning process.

The last finding shown by Figures 2 and 5 is that the gap in access to learning for elementary school students in urban and suburban areas tends to show the same results, namely that the gap in student access to learning is in the high percentage category. Of the three areas studied, showing a fairly high gap in student access to learning. This is supported by the results of observations where the learning process followed by students in rural areas was more evenly distributed in facilities and learning resources. During the learning process, students used the same media or learning resources so that there were no gaps between them. Meanwhile, in the periphery, the gap was quite significant, inseparable from the facilities owned by schools and those provided by parents. Therefore, there was a significant gap. Based on this description, it could be said that there has been a learning loss phenomenon after the COVID-19 pandemic. This condition was seen in the dimensions that were in the low and medium categories. As well as a fairly high learning loss occurring in rural areas. This can be seen from several things, namely the learning facilities provided, the role of parents in the learning process, and the learning methods carried out.

3-2-Discussion

The learning result shows that a learning loss phenomenon in the post-pandemic of COVID-19 is seen from the researched dimension on the categories of low and adequate. The occurrence of learning loss in the pandemic mass learning process cannot be separated from the student's readiness to participate in the learning process, the learning process facilities, the parent's role in the learning process, and how the learning process was carried out. In this study, the dimension that showed the occurrence of learning loss was the learning achievement of students. Learning achievement, when viewed from the goal, was to reveal someone's success in learning [63]. Learning achievement was the level of humanity possessed by students in accepting, rejecting, and assessing information obtained in the teaching and learning process, with one's learning achievement following the level of success of something in learning the subject matter expressed in the form of grades or report cards for each field of study after experiencing the learning process of teaching [64]. Student achievement decreased due to student readiness in the learning process. The readiness of students during the learning process would have an impact on the speed or involvement of students in the learning process, and the course would have an impact on mastery of the material. Although it was not specifically sought for student readiness in the learning process, this can be seen during the learning process carried out by the teacher. Where students cannot answer related to the material that would be taught by the teacher, in other words, students are still not ready to learn.

The student's readiness in the learning process influences the students' learning results [65]. In addition, learning readiness is related to the independent learning process carried out by students [66]. The student's readiness for the learning process cannot come just like that; it must also be supported by learning facilities that can be used in the process both at home and at school. Facilities are all the tools needed to facilitate the learning process. Facilities in teaching and learning activities are very important because the use of learning facilities includes all the tools that support student learning activities [67]. Especially at this time, the online learning process requires facilities such as smartphones, laptops, or tablets that can be used to access information [68]. In addition, currently, the most needed facilities are learning resources in the form of books that follow what is learned by students. However, at this time we cannot talk much about this, considering that the learning support facilities needed by students are still not optimal, especially in rural and suburban schools that are far from the city center. Students will experience difficulties in the learning process, which has an impact on student involvement in the learning process, student interest in the learning process, student independence in the learning process, and the relationship between teacher and student and the student-teacher relationship. These impacts are dimensions of learning loss, namely psychological and psychosocial. In other words, if the learning process is not supported by adequate facilities, there will be learning loss. In this case, it can be seen from the student's interest in the learning process.

Interest in learning is also defined as the intentional desire and involvement in cognitive activities that play an important part in the learning process, determine what part we choose to learn, and how well we learn the information provided [69]. Learning interest determines learning quality [70]. Learning interest also has indicators in it, namely, the feeling of being interested and happy to learn, active participation, a tendency to pay attention and great concentration power, having positive feelings and an increasing willingness to learn, being comfortable while studying, and being able to make decisions related to the learning process he is undergoing [71]. Student learning interests are very influential on student learning outcomes [72]. Therefore, learning interest is one of the important factors in the learning process. A good interest in learning will make the learning process more active, and students will be more involved in the learning process. The learner-centered learning process can strengthen the interaction of students with other students, teachers, and the learning environment. This interaction will be able to bring up new knowledge for students. Active learning can be used as a facility for the emergence of life skills [73]. *Active learning* can give students opportunities to show their abilities in the learning process, and students' engagement in the learning process can improve social interaction between students, students with teachers, and students with the environment [73]. Through the interaction in the process of students' learning, the knowledge they possess can be shared. Active learning improves the learning quality of the students [74, 75].

Based on these descriptions, it can be said that the student's readiness in the learning process and the facilities of the learning process will affect students' interest in the learning process, which has an impact on students' interest in participating in learning, which will have an impact on student achievement. In this study, student interest in the learning process and student achievement were not optimal, causing learning loss. Learning loss is a setback in academic progress, most often due to an extended gap or discontinuity in a student's education [38–41]. *Learning loss* is a phenomenon where students experience a decrease in the time spent learning and a loss of motivation to learn [42–44]. *Learning loss* is experienced by many students who live in suburban areas or rural schools, but that does not mean that schools in the city do not experience it, only the occurrence is lower. This learning loss greatly affects the quality of education; therefore, this condition must be resolved as soon as possible so as not to worsen the condition of Indonesian education. Several ways that have been offered to overcome the occurrence of learning loss include the application of the "*Kurikulum Merdeka*" at the education unit level, which can reduce learning loss during the COVID-19 pandemic [76]. The use of effective learning models, such as the implementation of e-learning, aims to overcome learning loss in the post-COVID-19 pandemic [77]. Quantum learning training to overcome student learning loss after the COVID-19

pandemic [78]. Overcoming learning loss after the COVID-19 pandemic was carried out by all parties, both the academic community and the local community and the central government, by designing an Independent Learning Curriculum [79]. Therefore, overcoming learning loss is to involve all parties in the learning process, which in this case is to establish good relations with the community and parents to improve the learning process as well as improve the quality of learning by using innovative learning models that are following the conditions in each school.

4- Conclusion

The results showed that there was a learning loss phenomenon after the COVID-19 pandemic. This condition was seen from the dimensions studied and was in the low and medium categories. As well as a fairly high learning loss occurring in rural areas. This can be seen from several things, namely the learning facilities provided, the role of parents in the learning process, and the learning methods carried out. Overcoming learning loss is to involve all parties in the learning process in this case, to establish good relations with the community and parents to improve the learning process, as well as improve the quality of learning by using innovative learning models that are following the conditions in each school. So one of the learning recommendations that can be used, which is the result of interviews conducted with teachers, is *Phenomenon Based Learning*.

5- Declarations

5-1-Author Contributions

Conceptualization, I.W.K.; methodology, I.W.K., and I.W.W.; validation, I.W.W.; writing—original draft preparation, I.G.W.S.A.; writing—review and editing, I.G.W.S.A.; supervision, I.W.K. All authors have read and agreed to the published version of the manuscript.

5-2-Data Availability Statement

The data presented in this study are available on request from the corresponding author.

5-3-Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

5-4-Institutional Review Board Statement

This study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of the Universitas Pendidikan Ganesha (Ganesha University of Education), Singaraja, Indonesia.

5-5-Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

5-6-Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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