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Elementary Students' Independence in Solving Mathematics Learning Problems in Post COVID-19 Pandemic

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ABSTRACT

Independent learning is one of the important aspects of solving Mathematics learning problems. The novelty of this research is the independence of students in solving mathematics learning problems in elementary schools during post-pandemic era. The purpose of this study is to describe the elementary students' independence in solving Mathematics learning problems in the post-COVID-19 pandemic. This research approach is qualitative with a case study design. The research was conducted in sixth-grade students of SDN 01 Papahan Karanganyar. Data collection used interviews, observation, and documentation techniques. The researcher tested validity data with technical and source triangulation. The data analysis used interactive analysis techniques, namely data collection, reduction, presentation, and conclusions. The results showed that most of the students were able to solve mathematical problems in the post-COVID-19 pandemic independently, marked by: 74.07% of students can understand their problems, 92.59% of students could plan their problem solving, 77.78% of students could solve their problems correctly and systematically, and 77.78% of students could re-check the results of solving their problems. The research implies that students who can solve mathematical problems independently will use the knowledge, skills, and experience gained to achieve optimal learning outcomes and use their mindset to solve problems in everyday life without relying on the help of others.

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1. INTRODUCTION

Independent learning is one of the important aspects that affect students' ability to solve problems in learning Mathematics. In line with Bayuningsih et al. (2017) problem-solving ability is influenced by student learning independence. Also in line with Vula et al. (2017) learning independence has a positive effect on problem-solving abilities. The higher the student's learning independence, the higher the learning outcomes obtained in the achievement of problem-solving abilities. It is also in accord with Bahar & Maker (2015) who explained that solving problems on their own is very important in learning Mathematics because it can encourage students to improve and build their processes during the period time when they are issuing some ideas and ideas.

Being able to solve problems is the most basic benefit of learning Mathematics (Aisyah et al., 2018; Hidayat & Sariningsih, 2018). By having independent learning, students will be able to solve their problems. For example, students can solve problems raised by the teacher in math problems according to their abilities without asking their friends for help (Sutama et al., 2018). Learning independence in solving a problem is built on the knowledge or competence and experience of students (Mulyaningsih, 2014; Syartissaputri et al., 2014; Mawaddah & Anisah, 2015; Rijal & Bachtiar, 2015). Students' independence in learning Mathematics can develop the ability to analyze, think critically, and solve problems (Anzora, 2017). By understanding mathematical concepts and communicating opinions, students can develop the thinking skills to solve problems (Hidayati et al., 2020). In reality, students' higher-order thinking skills in learning Mathematics such as solving mathematical problems are still far from what is expected in the curriculum. Most elementary students consider mathematics as a difficult subject, find it difficult to understand math material, and will stop working on math problems or assignments if they feel unable to do it themselves.

Independent learning is needed in the higher education system because it will help students to learn actively (Pratiwi & Laksmiwati, 2016). Learning independence has a positive effect on problem-solving abilities, where a high level of learning independence allows students to solve mathematical problems is also high. Meanwhile, if learning independence is low, the ability to solve mathematical problems is also low or not good (Sundayana, 2016; Arofah & Noordyana, 2021; Darma et al., 2016; Sulistyani et al., 2020). Independence in solving Mathematics learning problems is very important for elementary students because mathematics is very closely related to real situations in everyday life and student learning independence can be determined when students can or can't solve a problem in learning mathematics according to their abilities without relying on help others. For example, students will keep fish in a cube-shaped aquarium with a side length of 30 cm or in a rectangular aquarium measuring 40 cm long, 20 cm wide, and 30 cm high, students will of course calculate the volume of the aquarium according to the concept of calculating the volume of cubes and blocks before filling water.

Students who can solve learning problems independently without asking for help from others indicate that these students have independent learning (Rahmawati & Indriyani, 2021). Solving-problem is a process or activity of thinking to solve the problem at hand. Problem-solving ability to learn mathematics is very much needed for students, both in the process of understanding mathematics and in everyday life (Husna & Burais, 2019). Problem-solving ability is very important for students because with students being able to solve a problem, students gain experience, and use the knowledge and skills they already have to apply in everyday life (Elita et al., 2021). By having good independence in solving mathematical problems, it is hoped that students will be able to use their knowledge, skills, and mindset so that they can help students in solving problems in everyday life and students gain experience as a provision to take the next level to achieve future goals.

Mathematical problem-solving is a process that uses the power and benefits of mathematics in solving problems, through the stages of problem-solving (Hasbi & Putri, 2018). The stages of the problem-solving process according to George Polya, are: (1) understanding the problem; (2) making a problem-solving plan, that can determine the ways and procedures for solving problems, (3) solving problems in the right ways; (4) re-checking the results of problem-solving (Bahar & Maker, 2015;

Bertelle et al., 2012; Husna & Burais, 2019; Maharani & Bernard, 2018; Mawaddah & Anisah, 2015; Purba et al., 2021). According to Kuzzle, students' mathematical problem-solving ability can be interpreted as the ability of students to understand problems, plan problem-solving strategies, carry out the chosen solution strategies, and re-check problem-solving to then make solutions in other ways (Simamora et al., 2019).

Through problem solving and interaction in learning Mathematics, teachers can instill students' independence in learning (Hastuti et al., 2018). The teacher's role is very important to achieve good student learning outcomes as well as in forming an independent character in students (Widel & Ramadan, 2021). Teachers play an important role in building independent learning so that students can solve problems in learning Mathematics independently without depending on the help of others. In addition to teachers, parents have an important role in building student learning independence (Astari & Ramadan, 2022). Parents or families of students play an important role in guiding students well during learning at home. The guidance is not in terms of helping work on and providing answers to children's assignments, but guiding their children to be able to solve problems and complete tasks independently (Hafadh, 2020). The role of teachers and parents is needed to build elementary students' independence in solving Mathematics learning problems.

Elementary students' independence in solving Mathematics learning problems during the COVID-19 pandemic has not developed optimally, which is marked by students being less independent in dealing with their problems in learning so that in completing their tasks and responsibilities they still depend on the help of others (Sundari et al., 2022). With many obstacles in the online learning process and the improving situation of the COVID-19 pandemic, through the Circular of the Minister of Education, Culture, Research, and Technology Number 3 of 2022 concerning face-to-face learning is limited to educational units following the provisions that have been set and regulated in the Joint Decree (SKB) of the Four Ministers. In line with this policy, all levels of education in Indonesia have begun to apply face-to-face learning on a limited basis (students study in schools, which are limited by the number of students and the duration of time) adjusted to the conditions and situations in each region that have a positive impact on the recovery of education in Indonesia. Students are expected to be more enthusiastic about learning both independently and collaboratively.

In any situation and condition, the teacher must provide fun Mathematics learning so that students are motivated and enthusiastic in understanding the concepts and materials taught by the teacher so that students will gain meaningful knowledge and experience. In addition, teachers must also build independent learning in students, because with good learning independence students will be able to solve their problems without relying on the help of others and be able to complete tasks and responsibilities according to their abilities. In line with Priyantini et al. (2021) explains that in any situation, teachers must carry out learning and understand concepts clearly to students, especially learning Mathematics which is much related to everyday life.

Previous research that is relevant to students' independence in solving math problems, namely: (1) Sundayana (2016) analyzed the relationship between learning styles, learning independence, and mathematical problem-solving abilities of grade IX junior high school students; (2) Darma et al. (2016) analyzed the relationship of learning independence to the mathematical problem-solving ability of prospective Mathematics teacher students; (3) Sulistyani et al. (2020) analyzed the relationship between learning independence and the mathematical problem-solving ability of class X SMK students; (4) Arofah & Noordyana (2021) analyzed mathematical problem-solving abilities in terms of independent learning in the circle material of SMP class VIII students.

The subjects of the four relevant previous studies were not elementary school students and the object was only the effect of independent learning on mathematical problem-solving abilities. The novelty of this research is the independence of students in solving mathematics learning problems in elementary schools during post-pandemic era. The purpose of this study is to describe the elementary students' independence in solving Mathematics learning problems in the post-COVID-19 pandemic

with limited face-to-face expansion (students attend school every day, student capacity is 100%, and learning time is 6 hours).

2. METHODS

This research approach is qualitative with a case study research design. In line with Sutama (2019) who explains that qualitative research with a case study design is research aimed at describing and analyzing phenomena, events, and cases in a very narrow place or subject to get a detailed and in-depth picture of everything that happens in a particular case naturally. The research was conducted at SDN 01 Papahan Tasikmadu Karanganyar, with the reason that schools have implemented limited face-to-face learning in the post-COVID-19 pandemic (students enter school every day, student capacity is 100%, which is limited to 6 hours of study time from the usual 8 hours of lessons). Research data was obtained directly from research subjects and other supporting factors. The research subjects were sixth-graders as the main data source, supported by data and information from sixth-grade teachers, and parents or guardians. The object of research is elementary students' independence in solving Mathematics learning problems in the post-COVID-19 pandemic (students enter school every day, student capacity is 100%, and the duration of learning time is 6 hours of lessons).

Data collection used interviews, observation, and documentation techniques. The researcher used in-depth and semi-structured interview techniques, the questions were adjusted to the indicators of students' independence in solving mathematics learning problems that were posed to sixth-grade students, class teachers, and parents or guardians. The researcher used non-participant observer techniques and was not directly involved in the mathematics learning process on the volume of cubes and blocks. The interview and observation instruments refer to the indicators of student independence in solving Mathematics learning problems in elementary schools, namely: (1) understanding their problems; (2) planning their problem solving; (3) solving their problems correctly and systematically; (4) re-checking the results of solving their problems. The researcher used documentation techniques to obtain data from secondary data sources, namely: lesson plans, student assignment books, class lists, assessment sheets, value analysis, learning photos, and others related to elementary students' independence in solving Mathematics learning problems.

The researcher tested validity data with technical and source triangulation. The data analysis used interactive analysis techniques, namely data collection, reduction, presentation, and conclusions. The researcher collected data in the field according to research objectives, then reduced data and discarded it if data wasn't needed. After that, the researcher presented data in the form of narrative text, then verified the data and made conclusions. In line with Sugiyono (2017) according to Miles and Huberman, activities in qualitative data analysis were carried out interactively and take place continuously until completed and data-saturated through data collection, data reduction, data presentation, and verification or conclusions.

3. FINDINGS AND DISCUSSION

The purpose of this study is to describe elementary students' independence in solving Mathematics learning problems in the post-COVID-19 pandemic with limited face-to-face expansion (students enter school every day with a total student capacity of 100% and a duration of 6 hours of study). In line with the Circular Letter of the Minister of Education, Culture, Research, and Technology Number 3 of 2022 concerning face-to-face learning is limited to educational units following the provisions stipulated in the Joint Decree (SKB) of the Four Ministers and the permission letter from the Department of Education and Culture in Karanganyar Regency Number 421/5.334.4 the Year 2022 concerning permission to expand face-to-face learning is limited to all elementary and junior high schools if the teachers and students have been vaccinated 80%, students enter every day, student capacity 100 %, and the duration of learning time is 6 hours of lessons. For schools, if the

teacher and students have been vaccinated below 80%, enter every day, the student capacity is 50%, and the duration of learning is 6 hours of lessons.

Indicators of students' independence in solving Mathematics learning problems in this study adjusted to the characteristics and abilities of elementary students, namely: (1) understanding their problems; (2) planning their solving problems; (3) solving their problems correctly and systematically; and (4) re-checking the results of solving their problems. These indicators refer to George Polya's theory, that to achieve success in problem-solving skills, a process is needed, namely: (1) understanding the problem; (2) making a problem-solving plan, which can determine the ways and procedures for solving problems, (3) solving problems with the right ways and procedures; (4) rechecking the results of problem-solving (Bahar & Maker, 2015; Mawaddah & Anisah, 2015; Maharani & Bernard, 2018; Husna & Burais, 2019; Purba et al., 2021).

Researchers made observations on Mathematics learning in the post-COVID-19 pandemic with the volume of cubes and blocks. The teacher allows students to bring cell phones as a means and medium of learning. It looks like students are very enthusiastic about participating in learning because the teacher applies an interactive and problem-based learning model. The teacher seems to instill student learning independence in understanding material concepts and solving mathematical problems that arise in story problems. Data on the achievement of independence indicators in solving Mathematics learning problems based on observations of learning material for the volume of cubes and blocks in class and observations on assignment books from twenty-seven students with observation instruments are shown in the following table:

Table 1. Results of Observations on the Elementary Students' Independence in Solving Mathematics Learning in the Post-COVID-19 Pandemic

No	Indicators of student independence in solving math problems				Total student
	Understanding their problems	Planning their problem solving	Solving their problems correctly and systematically	re-checking the results of solving their problems	
1	√	√	√	√	16
2	√	√	×	×	4
3	×	√	√	√	5
4	×	×	×	×	2
Total student	20	25	21	21	
Percentage	74,07%	92,59%	77,78%	77,78%	
Average	80,56%				

According to the researcher's observations during learning and when students solve problems individually on story problems in the assignment book, it appears that 15 students have been able to solve mathematical problems accurately and systematically by reading and understanding the problems in the questions carefully first and then writing down what is known, was asked how to answer using the formula for the volume of cubes and blocks along with the steps, to calculate it correctly and draw conclusions from the answer, by voluntarily re-checking the results of problem-solving on the assignment questions before handing them over to the teacher. 4 students could understand the problem on their own by writing down the known and asked elements, could determine the formula but were not careful in calculating it, and seemed to ask for help from a friend but wrote it wrong so that the solution was not quite right and students didn't look to re-check the results of problem-solving because the time for working on the questions had run out. 5 students have been able to write formulas and solve their task problems using the right way without cheating

on their friends, students seem to re-check the results of problem-solving without being asked, but these students do not write down the elements that are known and asked. 2 students asked for his friend's answer but wrote it wrong and didn't check it again before collecting it so that the student didn't solve his problem correctly.

Based on table 1, students could independently solve Mathematics learning problems in the post-COVID-19 pandemic, as indicated by: (1) 74.07% or 20 of 27 students could understand mathematical problems independently by reading carefully and then deciding what to do, known and asked according to the problem in the question; (2) 92.59% or 25 of 27 students could plan their problem-solving by setting formulas and steps to solve mathematical problems according to their abilities and could determine relevant learning resources without having to ask for help from others; (3) 77.78% or 21 of 27 students could solve mathematical problems using the right and systematic way or steps then calculate them correctly, by their own volition able to dig up information from other learning sources (books in the library, knowledge books from bookstores, material notes, internet, etc.) without depending on the teacher's explanation; (4) 77.78% or 21 of 27 students could re-check the results of problem-solving without being asked by anyone.

Based on the results of the documentation in the assignment book and assessment book, the researchers saw that students' scores varied. Of the 27 student assignment books, there were 6 student assignment books whose answers are the same and students can copy the results of their friends. From the 21 student assignment books, it looked like students could solve their problems and the answer patterns were not the same.

To obtain more detailed and in-depth data and information regarding students' independence in solving mathematics problems in the post-COVID-19 pandemic, the researchers conducted interviews with the following sixth-grade teachers, students, and parents:

Understanding Their Problems

Students' independence in understanding Mathematics learning problems in the post-COVID-19 pandemic can be measured by whether or not they can understand mathematical problems, as stated by the sixth-grade teacher: "*There some students who do not understand the concept of volume and have difficulty working on story problems. Teachers often provide problem-based practice questions to determine students' understanding of the material that has been taught and train students' independence in solving problems. Students can understand their problems. For example, there are story questions about the volume of cubes and blocks, students read and understand the problem, then determine the elements that are known and asked without asking for help. Although not all of them, still within reasonable limits and not many*" (interview with sixth-grade teacher, 16/3/2022).

That is relevant to the student initials CAS, DC, GPH, and HND who stated that after explaining the material, the teacher often gave practice questions about stories. They admitted that they understood the material presented by the teacher when explaining the material for the volume of cubes and blocks. Before working on practice questions or assignments, they read the questions carefully and then determine what is known and asked according to the problem. It is also relevant to the parents with the initials HTP, DAO, NK, and AR who explained that their children were often given the task of doing math problems to do at home. Usually, children read carefully before working on story problems, after understanding, then write down what they know and ask themselves according to the problems that arise in the assignments.

Students with the initials AZ and SW realized that it was difficult to understand the concept of the volume of cubes and blocks, if given a story problem, they understood the problems in the problem as well as they could and sometimes asked for help to guide them. In line with their parents, whose initials are AD and TW, their children are sometimes slow to understand mathematical concepts if the material is considered difficult, by their own volition they dare to tell others who they feel can guide them but do not ask for answers. MA admit that they are weak in mathematics and have difficulty understanding mathematical terms or symbols, if they get a question, especially in the

form of story questions, and understand the problem in the matter, they often imitate their friends. Relevant to his parents, whose initials are HR, he stated that his child has a weakness in counting and is slow to understand mathematical concepts and in doing assignments.

Planning Their Problem Solving

Students' independence in planning Mathematics learning problems in the post-COVID-19 pandemic can be measured by whether or not they can plan mathematical problems in their way. Students can plan mathematical problem-solving independently, as stated by the sixth-grade teacher: *"After students understand their problems, most students can plan their problem-solving. They could determine the right way and strategy to solve problems in task problems without asking others. For example, being able to set their formula or way to answer questions about the volume of cubes and blocks. Although not all of them, still within reasonable limits and not many"* (interview with sixth-grade teacher, 16/3/2022).

Students with the initials, CAS, DC, GPH, and HND stated that after reading and writing down what they knew and asked according to the problems that arose in the questions, they were able to determine formulas or ways to answer them. They also stated that they were able to choose learning resources that matched the material without having to rely on the teacher's explanation. In line with their parents, who have the initials HTP, DAO, NK, and AR who stated that they always build learning independence in children to choose their other learning resources that are relevant to the material being studied and make a summary of the material without waiting for orders from anyone. When the teacher gives homework in the form of assignments, the child does it himself and can determine the formula or method that will be used to answer without having to ask his parents.

Students with the initials AZ and SW admitted that they did not understand the story questions, they admitted that sometimes they were able to determine their way to answer the questions, and sometimes they also forgot. They try their best to establish a formula or way to answer for themselves. On their own accord, they dared to ask the teacher to repeat the explanation because they felt they did not understand, for example, the concept of the volume of a cube and a cuboid. They try to read books or notes if they forget the formula to answer the questions. Relevant to parents, the initials AD and TW stated that when accompanying their children to study and do homework at home, their children were sometimes able to determine the correct formula according to the problem, and sometimes it was also wrong. They can search on the internet or read books if they forget the formula or do not understand the material taught by the teacher at school, but sometimes they also ask for help from their parents or siblings to guide them.

A student with an initial MA stated that they were weak in understanding mathematical symbols, so to determine formulas or ways to answer questions, they still often asked friends to teach them. Relevant to his parents, whose initials are HR, he explained that his son was weak in mathematics, especially in memorizing formulas. When the teacher gives assignments to be done at home, their children often ask their older siblings or parents to help them complete them.

Solving Their Problems Correctly and Systematically

Students' independence in solving Mathematics learning problems in the post-COVID-19 pandemic can be measured by whether or not students can solve mathematical problems in their way and in steps that are in line with what has been planned and calculate it correctly as well, as stated by the sixth-grade teacher that: *"Elementary students still need guidance from their teachers and parents, especially during the post-COVID-19 pandemic. Guidance is meant to provide motivation and facilitation, not guidance that provides answers. Students can independently solve mathematical problems appropriately and systematically. Some students work on assignments without the method or steps. The teacher always gives advice and appreciates students who work on questions by showing the process or the steps for getting answers, even though the answers are sometimes less precise, than those who work on the questions directly without writing down the steps"* (interview with sixth-grade teacher, 16/3/2022).

Relevant to the students with the initials DC, GPH, and HND who stated that they could solve their problems by using the methods and steps according to the predetermined formula and then calculating them correctly. For example, answering story questions begins by writing down what is known, and asking, how to answer by writing down the formulas, then doing it with the right steps and calculating it correctly, and after that making conclusions about the answers. Relevant to the parents with the initials DAO, NK, and AR who explained that when doing homework assignments, their children always tried to solve them themselves accompanied by the ways and steps to answer. For example, in the case of a story, the child can complete it completely, starting by writing down the elements that are known and asked, writing down the formulas and steps and calculating them correctly, then making their conclusions without having to ask their parents or siblings.

Students with the initials CAS and AZ stated that with their abilities they were able to solve story problems by writing down known and asked elements, formulas, and methods, but in calculating them they were not careful enough so that the answers and conclusions were inaccurate. His parents, who have the initials HTP and DAO, also said that their children were able to solve their problems, but sometimes they were not careful in calculating. The student with the initial SW stated that they worked on the questions according to the procedures taught by the teacher starting from writing down what they knew and asked, but to determine the formula and how to answer they sometimes forgot and asked their friends to help. MA admits that it is difficult to understand the material for volumetric figures, to work on story problems imitating his friend's answers, and writing answers directly without writing down what is known, asked, or how to answer it.

During the process of learning Mathematics in the post-COVID-19 pandemic, teachers allow students to bring cell phones for learning facilities and media. In understanding the concept of material or solving mathematical problems, students can explore information from other learning sources that are relevant to the material being studied without having to ask for help from others. According to CAS, DC, GPH, and HND students stated that they did not only depend on the teacher's explanation. If they have difficulty understanding the material being studied or solving math problems, they do not immediately ask others, but on their own volition review the material notes that have been made or find their solutions from other sources such as: by reading a book in the library during breaks or borrow books to study at home, read knowledge books purchased from bookstores, and dig up their information from the internet or other media. According to their parents, whose initials are DA, HTP, DAO, NK, TW, and AR, they stated that their children voluntarily often borrow books from the school library to read and study at home. Parents are also willing to buy books from the store if their children need them. In addition, their children are also able to dig up their information from the internet but are still under the supervision of their parents or family.

It is different with students with the initials SW and AZ who stated that if they did not understand the mathematics material or had difficulty working on the questions, they tried to study the material notes. His parents, whose initials were TW and AD, explained that if their children had difficulty doing problems at home, they would look for ways in the notebook. Able to find information on the internet, but because they don't have a cell phone, they have to wait for the cell phone of their parents or siblings at home. The student with the initials MA stated that they only relied on explanations from the teacher and asked their friends or parents for help if they had difficulty understanding the material or questions taught to them.

This is relevant to what has been expressed by the sixth-grade teacher: *"Although not all of them have, most of the students already have their own will to use other learning resources and do not only rely on material explanations from the teacher. Students automatically read books in the library or other books apart from textbooks. borrowed from schools and students are also able to dig up information related to the material learned on the internet. The teacher collaborates with parents to accompany children while studying at home so as not to use computers or cell phones for negative things"* (interviews with sixth-grade teachers, 16/3/2022).

Re-Checking the Results of Solving Their Problems

The independence of students in solving learning Mathematics problems in the post-COVID-19 pandemic can be seen in whether or not they can re-check the results of solving their problems without waiting for orders, as revealed by the sixth-grade teacher: *"In learning Mathematics during the post-COVID-19 pandemic with face-to-face learning, students can solve their problems and re-check the results of their work without having to be asked by anyone, this is different when during the pandemic by learning online from home, teachers cannot monitor students being able to solve problems and check it again independently or with the help of others"* (interviews with sixth-grade teachers, 16/3/2022).

The student with the initials AZ, CAS, DC, GPH, and HD explained that after they finished working on the problems or solved the math problems that were raised in the story questions, they did not collect them immediately, but checked again whether the process and the results of problem-solving were correct or not. In addition, it also checks again if there are questions that have been missed and have not been solved. The student's statement was strengthened by the parents of the students with the initials DA, HT, DA, NK, and AR who stated that they always instilled independence in their children, not least in terms of re-checking the answers to assignments that have been done without having to be reminded by anyone before being collected to the teacher so that later get optimal learning outcomes. In contrast students with the initials, SW and MA stated that they did not re-check them after completing the assignment questions because they did not have enough time and were afraid to be late in submitting their assignments.

Based on the results of the study, students could independently solve problems in learning Mathematics in the post-Covid-19 pandemic, as indicated by: (1) 74.07% students could understand mathematical problems independently by reading carefully and then deciding on themselves what to do known and asked according to the problem in the question; (2) 92.59% students could plan their own problem solving by setting formulas and steps to solve mathematical problems according to their own abilities and could determine relevant learning resources without having to ask for help from others; (3) 77.78% students could solve mathematical problems using the right and systematic method or steps and then calculate it correctly, by their own volition able to dig up information from other learning sources (books in the library, knowledge books from bookstores, material notes, internet, etc.) without depending on the teacher's explanation; (4) 77.78% students could re-check the results of problem-solving without being asked by anyone. Even though some students had not been able to solve math problems according to their abilities, they were still within reasonable limits.

These findings are relevant to Polya's theory, that in solving mathematical problems there are several stages, namely: (1) understanding the problem, students can determine the elements that are known, the elements that are asked, and other completeness according to the problem; (2) formulating a problem-solving plan, namely developing a solution plan by selecting and setting the right formula or method. In planning problem solving, the steps are to identify the problem and then look for the right ways and strategies to solve the problem; (3) solve problems by implementing a problem-solving plan and performing calculations correctly, bringing up various possibilities or alternative ways of solving formulas or knowledge that can be used in problem-solving; (4) rechecking the results of troubleshooting (Bahar & Maker, 2015; Mawaddah & Anisah, 2015; Maharani & Bernard, 2018; Islamiah et al., 2018; Husna & Burais, 2019; Purba et al., 2021). The use of students' metacognitive skills and strategies, such as task analysis, planning, completion, checking and reflection, self-monitoring and group skills, reading and writing skills, self-regulation, and self-assessment helps students in solving math problems (Tachie, 2019). One of the self-regulations carried out to increase the acquisition of academic values and problem-solving is independent learning (Al Mutawah et al., 2017).

Students can solve math learning problems in the post-COVID-19 pandemic without depending on the teacher's explanation and can dig up information from other relevant learning sources (internet, books in the library, and so on) without asking for help from others. These findings are in agreement with Suhendri & Mardalena (2015) that independence in solving problems in learning

mathematics can be done by trying to dig up information or knowledge independently from various learning sources and not depending on information from the teacher. It is also in line with the findings of Zahro et al. (2021) that the ability to explore and utilize various types of learning resources and manage learning time` is an attitude and action that shows independence in solving learning problems.

In Mathematics learning in the post-COVID-19 pandemic with limited face-to-face expansion (students enter school every day with a capacity of 100% of students and a duration of 6 hours of study), students could solve math problems independently, marked students able to: (1) understand their problems, (2) plan their problem solving; (3) solve their problems; (4) re-check the results of their problem-solving. This finding is different from the findings of Sundari et al. (2020) that in learning mathematics during the COVID-19 pandemic with limited face-to-face (students enter school three times a week with a capacity of 50% of students, the duration of learning is the morning shift from 07.00 to 09.00 WIB, afternoon shift from 09.00 to 11.00 WIB, and distance learning three times a week, students have not been able to solve their problems.

Independence in solving math problems is very important for elementary students because mathematics is very closely related to real situations that occur in everyday life, learning independence has a very positive effect on students' abilities. in solving mathematical problems. That is relevant to the results of research conducted by Darma et al. (2016); Sundayana (2016); Sulistyani et al. (2020); dan Arofah & Noordyana (2021) that learning independence has a positive effect on the ability to solve problems. If students' learning independence is high, it allows high ability to solve mathematical problems, and vice versa if students' learning independence is low, the ability to solve mathematical problems is also low. The difference is, that the current research does not only describe the independence of students in solving mathematical problems but develops it by describing the solutions that elementary students make when solving problems in learning Mathematics.

Students who can solve math problems are accustomed to using their mindset which can help them succeed in solving problems in everyday life (Sundayana, 2016). In learning Mathematics, problem-solving skills must be possessed by students to solve problem-based problems (Sumartini, 2016; Permata & Sandri, 2020; Iswara & Sundayana, 2021). The important goal of learning Mathematics is to produce students who can solve their problems in the right way and with strategy (Purba et al., 2021). Students who have a high independence character are relatively able to face all problems because they do not depend on others and always try to deal with existing problems (Arifah & Sumardjoko, 2017).

4. CONCLUSION

Elementary students' independence in solving Mathematics learning problems in the post-COVID-19 pandemic with limited face-to-face expansion (students attend school every day, student capacity is 100%, and study time is 6 hours) on the volume of cubes and blocks showed that most students could solve mathematical problems independently, marked by: 74.07% of students could understand their problems, 92.59% of students could plan their problem solving, 77.78% of students could solve their problems correctly and systematically, and 77.78% of students could re-check the results of their problem-solving without asking for help from others.

This research implies that students who can solve mathematical problems independently will get knowledge, skills, and experience, then use them to achieve optimal learning outcomes and build their thinking processes to solve problems in everyday life without relying on the help of others. It takes cooperation from all parties, both students themselves, teachers, parents, and the community in the surrounding environment to strengthen the foundation for building student independence in solving mathematics problems in the post-COVID-19 pandemic.

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Surat Edaran Menteri Pendidikan, Kebudayaan, Ristek, dan Teknologi Nomor 3 Tahun 2022 tentang Pembelajaran Tatap Muka Terbatas pada Satuan Pendidikan Mengikuti Ketentuan yang Sudah Diatur dalam Surat Keputusan Bersama (SKB) Empat Menteri

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