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THE INFLUENCE OF CRITICAL REASONING, INDEPENDENCE, AND RESILIENCE TO ADVERSITY ON THE NUMERACY COMPETENCE OF 5th GRADE STUDENTS IN CLUSTER IV KERAMBITAN

I Gusti Martha Sari[1*], I Gede Astawan[2], Siti Julaeha[3]
[1,3]Departement of Mathematics Education, Universitas Terbuka, Jakarta Province, Indonesia
[2]Departement of Mathematics Education, Universitas Pendidikan Ganesha, Bali Province, Indonesia

*Correspondence: marthagustiayu@gmail.com

ABSTRACT

This study aims to determine the effect of critical reasoning, independence, and resilience to adversity on the numeracy competence of fifth-grade elementary school students in cluster IV Kerambitan. This research is ex-post-facto research. The population used as the sample in this study was 82 students. The independent variables in this study are critical thinking, independence, and resilience to adversity, while the dependent variable is the students' numeracy competence. Data collection methods used in this study were questionnaires and tests. Data on independence and resilience to adversity were collected using the questionnaire method, while data on students' critical thinking and numeracy competencies were collected using the test method. Data analysis used in this study is multiple regression and partial correlation. Based on the research that has been done, it is concluded that: 1) there is a significant influence of critical reasoning on the numeracy competence of fifth-grade elementary school students in cluster IV Kerambitan, with an effect of 40.8% and an effective contribution of 20.26%, 2) there is a significant effect of independence in the numeracy competence of fifth-grade elementary school students in cluster IV Kerambitan, with an effect of 48.9% and an effective contribution of 17.98%, 3) there is a significant effect of resilience to adversity on the numeracy competence of fifth-grade elementary school students in cluster IV Kerambitan, with an effect of 42% and an effective contribution of 28.41%, 4) taken together, there is a significant influence of critical reasoning, independence, and resilience to adversity on the numeracy competence of fifth-grade elementary school students in cluster IV Kerambitan, with an effect of 66.70%.

Keywords: Critical Reasoning, Independence, Resilience to Adversity, Numeracy Competence

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PRELIMINARY

Education is an essential aspect of human life. Therefore, education has been given to students from an early age. Along with the times, the world of education is also growing to meet the demands of the times. In this 21st century era, education does not only focus on the cognitive aspects of students but also on developing the character of students from an early age. Developing students' character is certainly not easy and does not just appear. It is in line with Lickona (2012). There is an opinion that a student who grows and develops in a good moral environment will undoubtedly be a child who has good morals, and vice versa. Characters do not just appear but proceed from an environment that is constructed simultaneously and continuously. Therefore, to develop students' character in the school environment, it is necessary to have a learning process that requires students to think, speak and do good.

Since 2021, the Ministry of Education and Culture has changed the National Examination into a National Assessment, including the Minimum Competency Assessment, to promote student character formation in schools, especially elementary schools. The National Assessment aims to improve the quality of education. The National Assessment is designed to capture the quality of inputs, processes, and learning outcomes that reflect the performance of academic units and, at the same time, produce objective and comprehensive information for improving the quality of teaching and learning, which is then expected to have an impact on student character and competence.

One of the components evaluated in the Minimum Competency Assessment is numeracy literacy which is included in the realm of numeracy competence and is earliest known in the history of human civilization and belongs to functional literacy and is very useful in everyday life. Numerical competence functions effectively in learning, working, and interacting throughout life. Therefore, numeracy competencies are developed systematically and continuously in learning activities inside and outside the classroom (extracurricular). Numerical competence is essential for the current generation as well as knowledge and skills closely related to understanding numbers and symbols and analyzing quantitative information (graphs, tables, charts, etc.). By having good numeracy competence, students can competently apply their mathematical knowledge in real life (Wahyuningsih, 2021).

Furthermore, Pangesti (2018) also stated that numeracy competence is related to the ability to apply basic knowledge and mathematical principles and processes to everyday life problems, for example, understanding problems presented in tables or diagrams,

trading, and others. Knowledge of mathematics is not enough to make someone have numeracy competence because it is needed to solve problems that require many ways of solving, unstructured problems, and problems that have no complete solution and are not related to non-mathematical factors.

Data from the Indonesian Education Report Card in the nineteenth episode of Freedom Learning activities revealed that the character index is positively correlated with literacy and numeracy skills. Kemendikbud (2021) It shows the importance of the Independent Curriculum, which has a more holistic approach. Therefore, all schools in Indonesia should apply the Independent Curriculum properly.

Based on observations on February 21, 2022, in class V Elementary School in Cluster IV, Kerambitan District, Tabanan Regency, the learning process has been going quite well. However, the results are still unsatisfactory in the realm of student numeracy competence. It is in accordance with the results of interviews with teachers of class V Elementary School in Cluster IV, Kerambitan District, stating that various factors influence the achievement of students' numeracy competence.

The influencing factors include the lack of student interest in learning mathematics because many students do not like it, the lack of students' ability to understand formulas and concepts in working on questions that are oriented to critical reasoning abilities, students experience difficulties, as well as the endurance of students who is closely related to resilience to adversity where students who have the resilience to adversity will try to find answers to the questions and problems they face and not all students have them. In addition, students lack a sense of independence in working, existing facilities and infrastructure, and the teacher's ability to manage and design learning oriented to a Minimum Competency Assessment because teachers still have to understand the systems and aspects assessed in the National Assessment.

Based on the Education Report Card from the computer-based national assessment results, it was found that the students' numerical competency scores were below the minimum competency, which was 1.46 from the score range 1-3. This value is below the value of a similar education unit at the national level, which is 1.55. Meanwhile, the average score at the district/city level was 1.66, the average score at the provincial level was 1.64, and the average score at the national level was 1.57. It indicates that the numeracy competence of students, especially fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency is still relatively low.

Some factors predicted to influence students' numeracy competence are critical thinking, independence, and adversity resilience. Critical reasoning is part of the Pancasila student profile which is echoed in the Merdeka Curriculum proclaimed by the Ministry of Education and Culture. According to the Ministry of Education and Culture (2021), critical reasoning is the will and habit of making ethical decisions based on logical analysis and objective consideration of various evidence and perspectives. Facione (2013) found that critical reasoning has several aspects, namely: 1) the ability to interpret, such as categorizing and explaining intent; 2) analytical skills, such as the ability to assess ideas and identify arguments; 3) evaluation skills, such as forming conclusions and seeking evidence; 4) inference ability, such as the ability to evaluate opinions; (5) explanation skills, such as justifying conclusions by showing arguments; and 6) self-regulation abilities, such as self-correction.

The critical reasoning aspect above indicates that critical reasoning is a crucial ability that students must have from an early age. It is supported by research from (Nurfitriyanti et al., 2020), which states that students' critical thinking skills affect mathematics learning achievement by 24.07%. Furthermore, research from (Komariyah & Laili, 2018) found that the contribution of critical thinking to mathematics learning outcomes was 59.8%. Based on this previous research, it can be concluded that critical reasoning has a large influence on students' mathematics learning outcomes, as well as students' numeracy competence.

Critical reasoning is an ability that can make students not easily believe in something. However, students will seek the truth of something studied from various points of view and sources that are trusted. It, of course, will directly have a positive impact on the formation of student character. If the student's character is good, they will be able to form good numeracy competence in students.

The next factor that is predicted to affect students' numeracy competence is independence. Independence is a crucial aspect of human life. From an early age, the child's independence must be properly honed. It will be beneficial for the child's life in the future. Independence is an effort to detach oneself from the help of parents or other people to find oneself through seeking ego identity. Independence is the development of a steady and self-sufficient individuality. Independence is usually characterized by the ability to determine one's destiny, be creative and initiative, regulate behavior, be responsible, be able to hold back, make one's own decisions, and be able to solve problems without any influence from others (Hidayat, 2014).

Independence is also essential to be applied to the learning process. Especially during the Covid 19 pandemic, the situation in the world of education was uncertain. Sometimes students are allowed to go to school, and sometimes students have to study from home. Therefore, a student must be trained to be independent in learning so that they can still dig up information from various sources to solve the problems they face in the learning process. According to the Kemendikbud (2021) independence is the will and habit of managing thoughts, feelings, and actions to achieve learning goals in various contexts.

Independent learning is a learning activity that prioritizes self-awareness so that students want to learn independently and can handle learning independently. Learning independence can be interpreted as a learning activity carried out by individuals without depending on the help of others. Individuals will continue to learn to be independent in dealing with various environmental situations so that individuals can act independently in adjusting to the problems they face, which are based on creative and innovative traits. Independent students will try their best to understand the subject matter provided by the teacher and need to know despair.

Furthermore, Sriyono & Suparman (2012) also argue that learning independence is a self-need in the psychological aspect which is reflected in the form of activities carried out by students to solve the problems they face with their own initiative and will without depending on others. Through independence, students are able to learn according to their initiative. Independence can also be interpreted as overcoming all problems that occur to oneself by trying to overcome them alone without involving other people.

Learning independence is very important to be instilled so that students can show good achievement in the learning process at school. It is in line with the research results of Hardianto et al (2021) which state that student learning independence contributes to the influence of learning achievement in mathematics by 63.3%. Furthermore, the results of Indah & Anisatul (2021) show that independent learning positively influences student mathematics learning outcomes, with a significant influence of 48.5%.

Students with learning independence indicate that their character has begun to form. Students with independence in learning will undoubtedly try their best to dig up all valuable information to overcome all the problems they face in the learning process. It will certainly have a positive impact on students' numeracy competence.

The last factor that is predicted to affect students' numeracy competence is resilience to adversity. Life in the era of globalization creates an atmosphere of very tight competition in human life. To win this competition, people must be competitive, not give

up quickly, and be ready to accept challenges in life. This results in people with low resilience being easily run over by the times, while people with high resilience will succeed and become winners in life's competition. A person's success is not only determined by IQ (Intelligence Quation) but also by their adversity quotient (AQ) (Winaya 2021).

Based on the above, a person's spirit of resilience/AQ must be instilled and nurtured from an early age. Students who have a high adversity quotient (AQ) show a friendly personality and are readily familiar with the environment. These students are also more creative, innovative, confident, and motivated. They can find positive sources of happiness, are confident in their ability to overcome various challenges and obstacles, have a high fighting spirit in life, and never give up.

According to Stoltz (2000) AQ is a person's ability to observe difficulties and process these difficulties with their intelligence so that they become a challenge to solve. Resilience to adversity is rooted in how a person feels and relates to the challenges in his life Hibatul (2019) Resilience to adversity can be viewed as a science that analyzes human persistence in facing challenges in life. Resilience is an individual's soul because, with resilience, a person is able to survive in facing all problems in his life and judges that problems are opportunities, not obstacles (Suhendri & Ningsih 2018).

The explanation above indicates that one's resilience will be very useful for students in following the learning process. It is in line with the results of Hari (2020) which states that resilience and self-regulation affect the competence of Mathematics knowledge of fifth-grade elementary school students with an effect of 25%.

Students who have high resilience to adversity, of course, will not easily give up on learning. Students will try their best to show the best that students can, even though, in the process, students experience many obstacles or failures. This resilience can significantly affect students' ability to master or solve the problems they face in learning quickly, likewise, in mastering or honing numeracy competencies. Students who have high resilience tend to have good numeracy competence as well. It is because students in the learning process have felt many experiences and do not easily give up when facing a challenge.

Based on the explanation above, it can be assumed that students' critical reasoning, independence, and resilience influence their numeracy competence. Therefore, this research will be held to determine how significant the influence is..

METHODS

Critical reasoning indicators include understanding the problem in the given question, providing reasons based on relevant facts or evidence at each step, making the right conclusion, choosing the right reason to support the conclusion, using all information that is appropriate to the problem, providing further explanation and check again thoroughly from the beginning to end. Independence indicators include not being dependent on other people, having self-confidence, behaving in a disciplined manner, having a sense of responsibility, behaving based on one's own initiative, and exercising self-control. Resilience indicators include having problems that can be overcome, not giving up easily, being resilient, liking challenges, being happy with change, and having the courage to take risks.

This research is ex-post facto research in the form of a correlation study because it does not treat the variables and only takes data directly. Furthermore, this research includes a quantitative approach with a correlational design because this study tries to discover the contributions among the correlated variables (Koyan 2012).

The population in this study were all Grade V SD students in Cluster IV Kerambitan, Tabanan Regency, with 82 students. Because the population in this study was small, the entire population was used as the research sample. So the number of samples used in this study was 82 students.

This study's data collection method used the test and questionnaire methods. The test method was used to measure critical reasoning and numeracy competence. Meanwhile, the questionnaire method was used to measure students' independence and resilience in the learning process.

The instrument must be tested for validity and reliability in obtaining the desired data. The validity test included content validity and item validity tests. The content validity test was carried out by asking the expert whether the items were by the grid that was made. The experts involved in this study were a lecturer, a pedagogic expert, and a mathematician.

In conducting data analysis for this study, three stages were passed, namely: (1) data description stage, (2) analysis requirements testing stage, and (3) hypothesis testing stage. They tested the hypothesis in this study using simple regression analysis, multiple regression, and partial regression. For data analysis, this study will use the help of the IBM SPSS Statistics 25 program.

RESULT AND DISCUSSION

1) The Effect of Critical Reasoning on the Numeracy Competence of Grade V Elementary School Students in Cluster IV, Kerambitan District, Tabanan Regency, The Academic Year 2021/2022

Testing the first hypothesis in this study showed that critical reasoning significantly affects the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, with an F count of 55.024 and a significance value of 0.000. This study's findings align with the research of Nurfitriyanti et al (2020), which aims to determine the effect of critical thinking skills, adversity quotient, and locus of control on mathematics learning achievement. Her research found that the influence of critical thinking skills on mathematics learning achievement was 24.07%. The results of this study are also in line with the research of Komariyah & Laili (2018), which aims to determine the contribution of critical thinking to mathematics learning outcomes. Their research found that the contribution of critical thinking to mathematics learning outcomes was 59.8%, and other factors determined the remaining 40.2%. Research by Faradila et al (2017) aims to find out that there is a significant influence of critical thinking skills on the mathematics learning outcomes of fifth-grade students at SDN 3 Banda Aceh that there is a significant influence of critical thinking skills on the mathematics learning outcomes of fifth-grade students at SDN 3 Banda Aceh.

According to the Kemendikbud (2021) critical reasoning is the will and habit of making ethical decisions based on logical analysis and objective consideration of various evidence and perspectives. Facione (2013) found that critical reasoning has several aspects, such as: 1) the ability to interpret, such as categorizing and explaining intent; 2) analytical skills, such as the ability to assess ideas and identify arguments; 3) evaluation skills such as forming conclusions and seeking evidence; 4) inference ability, such as the ability to evaluate opinions; (5) explanation skills, such as justifying conclusions by showing arguments; and 6) self-regulation abilities, such as self-correction. Furthermore, recommends critical reasoning as the key to active learning. In active learning, students are always involved in all activities and thoughts about what they are doing. In short, active learning not only directs and conveys information but also develops students' analytical and critical reasoning abilities. Active learning, according to UNESCO has at least the following characteristics: 1) all students are actively involved, 2) students think actively, 3) encourage curiosity to ask questions, 4) students express their ideas, and 5) students can be critical.

The student's high curiosity and critical attitude in the learning process will certainly make students more enthusiastic about participating in the learning process provided by the teacher. It will also occur in learning that develops students' numeracy competencies. The better the critical reasoning students possess, the easier it will be for students to master essential concepts in mastering these numeracy competencies. Therefore, it can be concluded that critical reasoning significantly affects the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, for the academic year 2021/2022.

2) The Effect of Independence on the Numeracy Competence of Grade V Elementary School Students in Cluster IV, Kerambitan District, Tabanan Regency, The Academic Year 2021/2022

Testing the second hypothesis in this study showed that: independence significantly influences the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, with an F count of 76.504 and a significance value of 0.000. Students with good learning independence will be independent in dealing with every problem they face. This statement is reinforced by the research results of Hardianto et al (2021) , which aim to determine the effect of learning independence achievement on students of class VIII mathematics in the subject matter of relations and functions. His research stated that student learning independence influenced mathematics learning achievement by 63.3%. The results of this study are also in line with the research results of Indah & Anisatul, (2021), which aims to determine the effect of student learning independence on mathematics learning outcomes at Al Irsyad Middle School Surakarta. The research stated that learning independence positively influenced students' mathematics learning outcomes, with a significant influence of 48.5%. Therefore, it is necessary to increase student learning independence to improve learning outcomes.

Sriyono & A (2012) argue that learning independence is a self-need in the psychological aspect which is reflected in the form of activities carried out by students to solve the problems they face with initiative and self-will without depending on others. Through independence, students are able to learn according to their initiative. Independence can also be interpreted as the ability to overcome all problems that occur to oneself by trying to overcome them alone without involving other people.

Students who want to have independence in the learning process must be able to be creative. That is because by having creativity, students will be able to develop their ideas so that they not only accept whatever is given by the teacher but can also make

constructive contributions. Rusman (2010) reveals that the most crucial thing in the independent learning process is to see an increase in students' abilities and skills in the teaching and learning process without the help of others. In independent learning, students will try to understand the lesson's content themselves; if they have difficulty, students discuss it with the teacher. (Parwati et al., 2023) states that in independent learning, students must be accustomed to applying active and participatory learning methods to develop each self and not be bound by the presence of teachers and classmates. Students can determine directions, plans, resources, and decisions in independent learning to achieve academic goals.

The characteristics of students who already have learning independence can be seen from: 1) students already know what they want to achieve in their learning activities, 2) students can already determine their learning resources, and 3) students can already assess the level of ability needed to carry out the work or solve problems encountered in life (Rusman 2010). Based on the explanation, it can be seen that the higher the level of student learning independence, the higher the numeracy competence possessed by students. In other words, learning independence significantly affects the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, for the academic year 2021/2022.

3) The Effect of Resilience to Adversity on the Numeracy Competence of Grade V Elementary School Students in Cluster IV, Kerambitan District, Tabanan Regency, The Academic Year 2021/2022

Testing the third hypothesis in this study showed that resilience to adversity significantly affects the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, with an F count of 61.566 and a significance value of 0.000. The findings of this study are reinforced by the research of Hari (2020) which aims to analyze the effect of resilience to adversity and self-regulation on students' mathematical knowledge competence with a correlational research design. In their research, it was found that resilience and self-regulation affected the competence of Mathematics knowledge of fifth-grade elementary school students with an effect of 25%. Furthermore, research by Nurfitriyanti et al (2020) which aims to determine the effect of critical thinking skills, adversity quotient, and locus of control on mathematics learning achievement, also supports the results of this study. Nurfitriyanti's research found that the effect of critical thinking skills on mathematics learning achievement was 24.07%.

According to Stoltz (2000) resilience to adversity is a person's ability to observe difficulties and process them with the intelligence they have so that they become a challenge to solve. According to Supardi (2015) resilience to adversity is a person's ability to overcome difficulties and obstacles in his life. Resilience to adversity will also be able to predict how individuals will react in difficult situations.

Resilience to adversity is an ability that students really need to have in learning something new in their life. Students who have high resistance to adversity in the learning process will not easily give up if students encounter difficulties in solving the problems they are studying. In addition, students will continue to try various ways to answer these problems until these problems can be solved properly and correctly, (Widana & Umam, 2023).

There are various challenges in mastering numeracy competencies, especially in learning mathematics. One of these challenges is the resilience of students in accepting different pressures or problems (resilience to adversity). In the teaching and learning process, it is essential for students who have high resilience to adversity. Students with high resilience will try their best to solve their numeracy problems. Based on the explanation, it can be concluded that resilience to adversity significantly affects the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, for the academic year 2021/2022.

4) The Effect of Critical Reasoning, Independence, and Resilience to Adversity Together on the Numeracy Competence of Class V Elementary School Students in Cluster IV, Kerambitan District, Tabanan Regency, Academic Year 2021/2022

Testing the fourth hypothesis in this study obtained the results that critical reasoning, independence, and resilience to adversity together had a significant effect on the numeracy competence of fifth-grade elementary school students in Cluster IV, Kerambitan District, Tabanan Regency, with an F count of 52.149 and a significance value of 0.000. According to the Kemendikbud (2021) numeracy is the ability to think using concepts, procedures, facts, and mathematical tools to solve contextual problems in everyday life that are appropriate for individuals as good citizens. This opinion is confirmed by Nehru (2019), who states that numeracy skills can be used as capital for students to master other subjects.

The application of numeracy literacy in thematic learning is an implementation of learning activities carried out by educators by creating learning activities that involve numeracy in several subjects to be studied. For example, in one theme, several subjects are

designed by themselves using methods, models, and approaches, and providing media that can make it easier for students to understand numeration material easily (Yustitia & Juniarso 2020).

According to (Darwanto et al 2021) Literacy and numeracy skills are the best protection for the progress of a country from being left behind because almost every aspect of life requires numeracy skills. In everyday life, when going into business, starting a business, health problems, and even national life, all these require numeracy competence. For this reason, strengthening numeracy competence in this field is very important.

Due to the importance of numeracy competence for students to master, a teacher must be able to develop the students' numeracy competence. One way is to know the factors that influence numeracy competence. In this study, it has been proven that students' critical reasoning, independence, and resilience to adversity together significantly contribute to their numeracy competence. Therefore, if teachers want to develop students' numeracy competence, they should consider those three factors.

CONCLUSION

Based on the research that has been done, it can be concluded as follows.

1) Critical reasoning significantly influences the numeracy competence of Class V Elementary School Students in Cluster IV, Kerambitan District, Tabanan Regency, in the academic year 2021/2022.
2) There is a significant influence of independence on the numeracy competence of Class V SD students in Cluster IV, Kerambitan District, Tabanan Regency, for the academic year 2021/2022.
3) There is a significant effect of adversity on the numeracy competence of Class V SD students in Cluster IV, Kerambitan District, Tabanan Regency, for the academic year 2021/2022.
4) Taken together, critical reasoning, independence, and resilience to adversity significantly influence the numeracy competence of Class V Elementary School Students in Cluster IV, Kerambitan District, Tabanan Regency, for the academic year 2021/2022.

Suggestions that can be conveyed based on the research results are as follows.

1) Teachers are advised to develop and improve students' critical reasoning, independence, and resilience to adversity so that students' numeracy competence can be improved.

2) Schools are always advised to provide a platform for students to develop their numeracy competencies.
3) Other researchers are advised to develop this research by using more diverse variables to minimize problems in education.

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