

## Study of the Use of Assessment for Learning and Creative Thinking Skills of High School Students

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The problem of this research is how to use assessment for school learning and what are students' creative thinking skills? Research objectives: First, to uncover, analyze, identify, describe the learning assessment used by teachers and students of Nusantara Indah Sintang Senior High School. Second, to express, analyze and describe students' creative thinking skills. This study uses a descriptive qualitative research method of survey type. The population and sample are the teachers and students of Nusantara Indah Sintang Senior High School. Data collection tools in the form of questionnaires and interviews. Data analysis can be descriptive qualitative. The results of the study revealed that the use of assessment for learning in school was suboptimal or infrequent, both from teacher and student questionnaire data, as well as confirmed teacher and student interview data. Likewise, the creative thinking abilities of students who are also not optimally checked or do it rarely can be seen from the teacher's questionnaire data - an average of 56.13 percent, while the students' questionnaire data, with an average of 1.66, do not agree with the category. In addition, it is confirmed by the interview data that the four indicators of creative thinking were not optimally enabled at school.

Keywords: assessment for learning, creative thinking, students, Indonesia, learning, assessment

## INTRODUCTION

Assessment for learning (AfL) is carried out during the learning process and is usually used as a basis for improving the teaching and learning process. With AfL, educators can provide feedback on student learning processes, monitor and determine their learning progress. Assessment for learning can also be used by educators to improve performance in facilitating students. Various forms of AfL assessment, for example assignments, presentations, performance appraisals, skills, projects, including quizzes (Corebima, 2008). The main principle in implementing AfL is a thorough evaluation starting from planning, process, to the end of learning. The application of AfL will provide more opportunities for students to develop their creativity and activities in learning, so that it is very possible for students to achieve the best performance.

Assessment for learning (AfL) is a way of assessing or evaluating learning. The implementation of AfL in learning makes it possible for teachers and students to play a major role in efforts to improve

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and enhance learning in the classroom. Teachers are directed to have professional knowledge and skills in teaching, while students are directed to improve and enhance their learning process by involving them in assessments through self-assessment, so that the quality of learning processes and products becomes better. Several studies have proven that the application of the AfL model is proven to increase learning effectiveness. One of the studies conducted by Mansyur (2011) proved that the application of AfL can increase the effectiveness of learning mathematics in junior high schools.

Black & William, (2006) & Budiyo, (2010) revealed that the assessment so far by making values at the end of the material has resulted in biased and unfavorable subjectivity in improving the quality of learning, such as encouraging rote and superficial learning; assessment is seen more as a competition; not paying attention to student learning difficulties; and separate assessment in the learning process. Therefore, the researcher wants to reveal how the use of assessment for learning in the school is.

According to Frey, et al (2012) authentic assessment can support classroom instruction, collect evidence from multiple activities, generate learning and teaching between participants, and reflect local values, standards, and controls. Palm, (2008) also concluded that authenticity is defined as a real assessment in the sense of the process and product of the assessment conditions or context, and is true for life outside of school, curriculum, and classroom practice or learning and instruction. Assessment is not only aimed at scoring and ranking, but also as an effort to provide feedback to both students and educators to make improvements to teaching and learning as soon as possible to achieve common goals. In other words, assessment has always been an integral and inseparable part of learning and a crucial part of helping students and educators in teaching and learning (Purnomo, 2013).

Corebima, (2008) states that some of the tools used in authentic assessments, namely (1) checklists, which are about learning objectives, writing or reading progress, writing and reading fluency, learning contacts, and so on, (2) simulations, (3) essays and other writing examples, (4) demonstrations or actions, (5) entrance and progress interviews, (6) oral presentations, (7) evaluations by other peer instructors both informal and formal, (8) self-assessment, and (9) questions for initiated responses.

Thus the use of assessment for learning in these schools needs to be researched/seen/know which of the data found will be a solution or input for these schools to develop assessments for learning in learning. In addition to identifying AfL, it is also necessary to identify and analyze higher-order thinking skills, especially creative thinking, which are the impact of using the AfL.

Higher Thinking Order Skill (HOTS) is an ability that everyone needs to have in thinking, understanding, analyzing, evaluating, processing, and representing information, reasoning and creating things at a higher level (Stiggins, 1994). This affects the development of one's skills, in thinking critically, creatively, and solving problems. Morocco, et al (2008) revealed that learning and living competencies in the 21st century are marked by high comprehension competencies, critical thinking, being able to collaborate, communicate, and think creatively. According to Robles (2012) integrity and communication are the two most important soft skills needed by workers to be successful at work. Thinking activities regarding subject, content, and problems are carried out through analysis, assessment, and reconstruction activities (Papp, et al, 2014).

The National Education Association has identified 21st century skills as "The 4Cs." "The 4Cs" include critical thinking, creativity, communication and collaboration. Leen, (2014) also added about creativity, that creativity is a skill to discover new things that did not exist before, are original, develop new solutions for each problem, and involves the ability to produce new, varied, and unique ideas.

There are four indicators of creative thinking skills, namely fluency, flexibility, originality and elaboration. Fluency refers to a person's ability to generate many ideas, ways, suggestions, questions and alternative answers. Flexibility is the ability to generate a variety of ideas, answers and questions

from different perspectives. Originality is the ability to generate ideas to solve problems and create unique and distinctive thinking. And finally, elaboration refers to a person's ability to develop ideas along with the details (Hu W, Adey.P, 2010 & Filsaime D. K (2008). The ability to think creatively is an important thing for students, especially in the teaching and learning process (Listiani, 2020). Through the ability to think creatively, students are required to be able to understand, master, and solve the problems they are facing. In solving a problem, students are expected to be able to come up with creative new ideas or solutions in analyzing and solving these problems so that a solution can be obtained however, the ways of solving students in expressing new ideas or solutions are of course different (Febrianingsih, 2022). Therefore, students' creative thinking abilities in schools need to be analyzed so that this becomes the basis for providing solutions through the learning process or the use of more learning resources appropriate.

The research was conducted at Nusantara Indah Sintang High School, the reason for choosing that school was that it was known that the school was still in the developmental stage, both the learning process and the learning outcomes obtained as well as the outputs and outcomes generated from the school. In addition, the location of this school is not far from our institution, namely STKIP Persada Khatulistiwa Sintang, and the school provides sufficient research samples for researchers.

From this background, research questions can be formulated, namely: first, how is the use of assessment for learning in the school? Second, how to empower the ability to think creatively in the school. The research objectives are as follows: first, to reveal, identify, analyze, and describe the assessment for learning used by teachers and students of SMA Nusantara Indah Sintang Senior High School. Second: reveal, analyze, identify the development of creative thinking skills that have been empowered.

## **METHOD**

### **a. Research design**

The research used a descriptive qualitative approach with the type of research being survey research. The survey research was conducted for the first time, revealing, identifying, analyzing, and knowing the use of assessment for learning in schools for teachers and students. Second, to reveal, identify, analyze and describe students' creative thinking abilities. Survey research is research that takes a sample from one population and uses a questionnaire as the main data collection tool. The survey research steps consist of 1) formulating problems and determining survey objectives, 2) identifying research subjects, 3) selecting data collection techniques, 4) making instruments, 5) distributing instruments, and 6) data analysis and reporting (Fraenkel, 2012).

### **b. Research Subjects and Objects**

Research subjects are research boundaries where researchers can determine them with objects, things or people to attach research variables. the object of research is a variable or what is the focus of a study (Sugiyono, 2012). the subject of the study were teachers and students of class X of Nusantara Indah Sintang Senior High School, West Kalimantan, Indonesia. The object of this study consisted of 5 teachers and active students with a sample of 30 students.

### **c. Research Instruments**

The instruments in this study were the main instruments, namely the questionnaire on the use of assessments for learning on teachers and students and the questionnaire on the skills to think creatively on teachers and students, and supporting instruments, namely teacher and student interview sheets

about the use of assessments for learning and teacher and student interview sheets about thinking skills creative students. Before the research instrument is used, a validation test is carried out by the expert

team first. The results of the expert validation of the assessment are feasible to use with an average value of 3.88. The following is an example of the questionnaire instrument used.

**QUICKER RESPONSE OF TEACHERS ON THE USE OF ASSESSMENT IN SCHOOLS**

Respondent Name :  
 Work :  
 Date and time :  
 School name :

**Instructions:**

- You are requested to provide answers to the table for using the assessment in learning provided in Table 1 and continue to provide reasons for using the assessment in Table 2.
- In table 1, it is sufficient to put a check mark (X) in the number column that is in line with the statement above. These numbers can be interpreted with the following statements: 1 never use, 2 rarely use, 3 sometimes, 4 always use.
- At the end, you are asked to provide suggestions for the use of this instrument to your particular school in history learning.

**Table 1. Use of Assessment in Schools**

No	Type of Assessment	Oftentimes use (X)	Sometimes (X)	Rarely use (X)	Never use (X)
1	Have you ever taken an interview?				
2	Have you ever taken a written test?				
3	Have you ever taken a multiple-choice test?				
4	Have you ever done a true-false test?				
5	Have you ever used an observation sheet?				
6	Have you ever used a group contract?				
7	Have you ever used an interview sheet?				

Comments: .....

Figure 1  
Teacher's response questionnaire to the use of assessment

**QUESTIONNAIRE STUDENT RESPONSE TO THE USE OF ASSESSMENT IN SCHOOLS**

Student name :  
 Class :  
 Date and time :  
 School name :

**Instructions:**

- You are requested to provide answers to the table for the use of assessment in learning provided in Table 1 and continue to provide suggestions in Table 2.
- In table 1, it is enough to put a check mark (X) in the number column that is in line with the statement above. These numbers can be interpreted with the following statements: 1 never use, 2 rarely use, 3 sometimes, 4 always use.
- At the end, you are asked to provide suggestions for the use of instruments in academic, especially in learning.

**Table 1. Use of Assessment in Schools**

No	Type of Assessment	Oftentimes use (X)	Sometimes (X)	Rarely use (X)	Never use (X)
1	Have you ever been given an interview test by the teacher?				
2	Have you ever been given a written test by the teacher?				
3	Have you ever been given a multiple-choice test by the teacher?				
4	Have you ever been given a true-false test by the teacher?				
5	Have you ever been given an observation sheet by the teacher?				
6	Have you ever been given a group contract by the teacher?				
7	Have you ever been given an interview sheet by the teacher?				

Comments: .....

Figure 2  
Questionnaire of student responses to the use of assessment

**CREATIVE THINKING QUESTIONNAIRE FOR TEACHERS**

Respondent Name :  
 Work :  
 Date and time :  
 School name :

**Instructions:**

- Indicate and provide answers to the table of usability in learning as listed in the table below.
- In the table, it is enough to put a check mark (X) in the number column that is in line with the statement above. The statements can be interpreted with the following statements: Yes, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
- At the end, you are asked to provide suggestions for how to improve the instrument.

**Table 1. Creative Thinking Questionnaire**

No	Aspect of Creativity	Indicators	Yes	No
1. Fluency thinking (ability)	Are students given the opportunity to generate ideas, opinions, suggestions or other problems?	Are students given the opportunity to generate ideas, opinions, suggestions or other problems?		
		Are students given the opportunity to generate ideas, opinions, suggestions or other problems?		
		Are students given the opportunity to generate ideas, opinions, suggestions or other problems?		
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		Are students given the opportunity to generate ideas, opinions, suggestions or other problems?		
		Are students given the opportunity to generate ideas, opinions, suggestions or other problems?		
		Are students given the opportunity to generate ideas, opinions, suggestions or other problems?		
2. Ability to think (ability) (creativity)	Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?	Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?		
		Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?		
		Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?		
		Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?		
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		Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?		
		Are students given the opportunity to be able to solve problems, draw or think about other people's ideas, ideas, etc?		

Suggestions: .....

Figure 3  
Creative thinking questionnaire for teachers

**STUDENT CREATIVE THINKING QUESTIONNAIRE**

Student name : \_\_\_\_\_  
 Class : \_\_\_\_\_  
 Date and Time : \_\_\_\_\_  
 School Name : \_\_\_\_\_

**Instructions:**  
 1. You are expected to provide answers to the table of creativity in learning provided in this table below.  
 2. In this table, it is enough to give a check mark (✓) in the horizontal/vertical column, but it is also with the maximum given. These observations can be supported with the following statements: SS = Strongly agree, S = Agree, R = Undecided, TS = Disagree, STS = strongly disagree.  
 3. At the end, you are asked to give suggestions about leaving the one to make the student creativity.

No	Aspect of Creativity	Indicator	SS	S	R	TS	STS
1	Ability to think fluently	I can give forward ideas, answers, suggestions in solving problems I can solve faster and do more than others I can choose the results of the discussion with the work from the understanding can be smoothly I work from a superior stage in problem solving I am able to explain using ideas about a problem through the world that I know I make everything related to the material and lead to the solutions from various sources I can give a variety of ideas or ideas					
2	Ability to think flexibly	I can see a problem from a new & different point of view I can apply concepts, properties or rules in problem solving examples I am able to answer questions from the teacher during <u>problem solving</u> I can bring up problems, ideas or things that no one else has thought of					

3	Original thinking ability (Originality)	I can create different and completely new ideas or work on the knowledge of previous creation I have a desire to find out, to deepen my knowledge I can do the troubleshooting in my own way I can present or look for problems in my own way I can provide troubleshooting solutions in my own way					
4	Ability to detail (elaboration)	I can develop or enrich other people's ideas or responses to my <u>problem solving</u> I can explain the factors causing the problem or the emergence of the problem I can explain or describe the solution in detail with systematic steps					

Suggestions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Figure 4  
Creative thinking questionnaire for students

**d. Research Process and Data Analysis**

The procedure in this study consisted of several stages, namely: 1) the preparation stage, 2) the implementation stage, and 3) the final stage.

**1. Preparatory Stage**

The steps taken in the preparatory stage included: 1) making observations at Nusantara Indah Sintang Senior High School, 2) making research instruments in the form of: questionnaires for teachers and students, teacher and student interview sheets 3) validating research instruments, and 4) determine the time for conducting the research in consultation with the teachers of Nusantara Indah Sintang Senior High School .

**2. Implementation Stage**

The steps taken at the implementation stage include: 1) giving explanations to students about the objectives of the activities to be carried out and instructions for implementation, 2) conducting interviews with teachers, 3) giving questionnaires to teachers, 4) giving questionnaires to students, and 5) conducting interviews with students. The stages of the research which cover the whole can be seen in Figure 5.

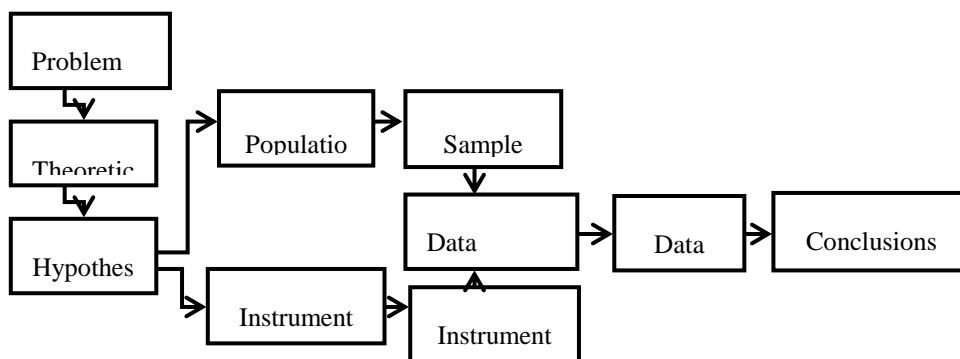


Figure 5  
Overall research procedure steps

### 3. Final Stage

The steps taken at the final stage include: 1) analyzing the data, which includes: a) data reduction; b) data presentation; and c) drawing conclusions, and 2) compiling research reports and making research articles. The steps of data analysis can be presented in Figure 6.

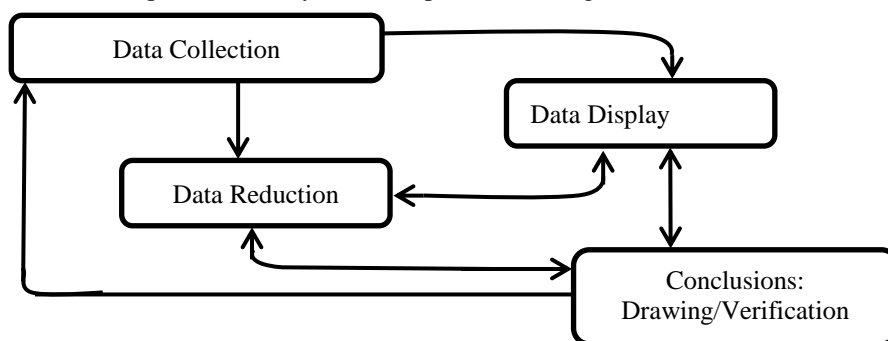


Figure 6  
Research data analysis steps

## FINDINGS

In this study, there were two variables analyzed, namely assessment for learning and creative thinking skills. Where each data can be taken from teacher and student respondents. Assessment for learning data is collected through questionnaires and interviews, as well as data on creative thinking skills taken from questionnaires and interviews. The following will be presented about the results of research from these two variables.

### A. Use of Assessment for Learning in Schools

In this study, the use of assessment for learning in schools was obtained through two data, namely questionnaire data and interviews. From the questionnaire data given to teachers and students, it can be seen that the use of assessment for learning at Nusantara Indah Sintang Senior High School is not optimal or it can be said that it is rarely done, so this will have an impact on students' creative thinking skills. It can also be seen in the interview data that the use of assessment for learning is not optimal or is rarely done. In the following, questionnaire data and student and teacher interview data are presented regarding the use of assessment for learning.

#### 1. Questionnaire data

##### a). Questionnaire data for Assessment for Learning on Teachers

From Table 1 it can be seen that for the 16 questionnaire questions given to teachers related to the use of assessments for learning, it appears that there were only two questions, namely the first and second questions which received a score of 4 with a description of frequent use. Where the two questions are about the test instrument, meaning that the teacher always or often uses the test instrument. As for questions 3 to 16 related to non-test instruments or assessments for learning. Where these questions tend to get a value of 2 and 3 with a description of rarely using and sometimes using. So that it can be revealed that the assessment for learning in these schools has not been optimally used.

Table 1  
Data for the assessment for learning questionnaire for teachers

No	Question items	Average value	Description
1	Question 1	4	Often used
2	Question 2	4	Often used
3	Question 3	2	Rarely used
4	Question 4	3	Sometimes used
5	Question 5	2	Rarely used
6	Question 6	2	Rarely used
7	Question 7	2	Rarely used
8	Question 8	2	Rarely used
9	Question 9	2	Rarely use
10	Question 10	3	Sometimes used
11	Question 11	2	Rarely used
12	Question 12	2	Rarely used
13	Question 13	3	Sometimes used
14	Question 14	3	Sometimes used
15	Question 15	2	Rarely used
16	Question 16	2	Rarely used

b). *Assessment for Learning questionnaire data on students*

From Table 2, it can be seen that for the 16 questionnaire questions given to students related to the use of assessment for learning, it can be seen that there are only two questions, namely the first and second questions which get a score of 4 with descriptions of frequent use. Where the two questions are about the test instrument, it means that students always or often use the test instrument given by the teacher. As for questions 3 to 16 related to non-test instruments or assessments for learning. Where these questions tend to get a value of 2 and 3 with a description of rarely using and sometimes using. So that it can be revealed that the assessment for learning in these schools has not been optimally used.

Table 2  
Assessment questionnaire data for student learning

No	Question items	Average value	Description
1	Question 1	4	Often used
2	Question 2	4	Often used
3	Question 3	2	Rarely used
4	Question 4	2	Rarely used
5	Question 5	2	Rarely used
6	Question 6	2	Rarely used
7	Question 7	2	Rarely used
8	Question 8	1	never used the instrument
9	Question 9	2	Rarely used
10	Question 10	3	Sometimes used
11	Question 11	2	Rarely used
12	Question 12	1	never used the instrument
13	Question 13	3	Sometimes used
14	Question 14	2	Rarely used
15	Question 15	1	never used the instrument
16	Question 16	2	Rarely used

## 2. Interview Data

### a). Assessment interview data for learning on teachers

In the following, interview data with teachers are presented as supporting data related to the use of assessments for learning. Where from the 4 questions submitted it can be seen that the teachers are not used to using assessments for learning or it can also be said that they rarely use assessments for learning. For more details about the results of the teacher interviews, it can be seen in Table 3.

Table 3

Results of interviews for learning assessment of teachers

No	The question	The answer	The reason
1	Have you often/always use test instruments? and what shape is it?	Often use test questions. Such as essay questions and multiple choice questions	Because the instrument is often used and already known by students. In addition, the instrument is easy to use or perform because it does not require difficult instructions. Essay and multiple choice test instruments can determine students' understanding of the concepts that have been taught.
2	Have you often use non-test instruments?, and what forms do they take?	Sometimes using non-test instruments, in the form of observation sheets, skills or performance assessments.	Sometimes using observation sheets or performance/skill assessments to find out students' skills in practice. But non-test instruments tend to be rarely used, only a few times.
3	Have you often carry out assessments in the learning process and in what forms?	Assessment during the learning process is rarely done, if it is done in the form of a group percentage assessment	They don't really understand how to use assessments in the learning process or authentic assessments, which are often carried out in the form of student assessments during presentations.
4	Have you ever done a product evaluation? And what products are assessed?	Rarely use product assessment, if done in the form of an assessment of a practicum report	Rarely use product assessment because students are rarely assigned to make products unless there is a practicum, so the product that is assessed is usually a practicum report.

### b). Assessment interview data for learning on students

In the following, data from interviews with students as supporting data regarding the use of assessment for learning are presented. Where from the 4 questions submitted it can be seen that students are not used to using assessments for learning or it can also be said that they rarely use assessments for learning. For more clarity about the results of the student interviews can be seen in Table 4.



Table 4  
The results of the interview assessment for learning on students

No	The question	The answer	Student opinion
1	Have you ever been given a test by the teacher? What shape are they?	Yes I have, the shape was like an essay test question or multiple choice test questions	The test questions given are very easy instructions and can be easily done. Almost all subjects always have a test. Either in the form of an essay test or a multiple choice test. The level of difficulty depends on the subject
2	Have you ever been given non-test questions by the teacher, and in what form?	Yes I have, in the form of performance assessment during practicum	Performance assessment is quite well done where this can motivate us in learning or practicum. Only performance assessment is rarely done.
3	Have you ever done an assessment in the learning process and what form does it take?	Rarely, if done in the form of an assessment during group presentations	Assessment during the learning process is rarely carried out, if it is carried out like a group discussion assessment during group presentations, this is also interesting because it can motivate group study.
4	Have you ever been given a product measurement? And what form of product is assessed?	It is rarely done, if it is done in the form of an assessment of a practicum report	The product evaluation is quite good, because in this case the evaluation of the practicum report is carried out in detail and the practicum report is returned.

### B. Students' Creative Thinking Skills

In this study, to reveal students' creative thinking skills in schools, it was obtained through both data, namely questionnaire data and teacher and student interviews. From the questionnaire data and interviews given to students, it can be seen that students' creative thinking skills at Nusantara Indah Sintang Senior High School are still low. Data on creative thinking skills can be seen in several indicators of creative thinking skills in questionnaires and interviews that have not been optimally manipulated or not carried out by teachers. To more clearly know the existing creative thinking skills, it can be seen from the following questionnaire and interview data.

#### a. Questionnaire data

##### a). Creative thinking questionnaire data on teachers

From the creative thinking questionnaire data for teachers, it can be seen that the four indicators of creative thinking have been implemented in schools but are not optimally implemented/developed. The first indicator of the ability to think fluently gets the highest score of the other indicators, namely 90% is done. While the second to fourth indicators have a lower average value. The overall average score for the four indicators of creative thinking is 56.13% so that it can be said that the ability to think creatively in the school has not been empowered optimally. To more clearly see the creative thinking questionnaire data on teachers can be seen in Table 5.

Table 5  
Recap results of the creative thinking questionnaire for teachers

No	Creativity Aspect/Indicator	Question Item	Yes %	No %
1	Fluent thinking ability	Question 1	100%	0%
		Question 2	100%	0%
		Question 3	90%	10%
		Question 4	90%	10%
		Question 5	80%	20%
		Question 6	80%	20%
	Average		90%	10%
2	Ability to think flexibly	Question 1	90%	10%
		Question 2	70%	30%
		Question 3	60%	40%
		Question 4	50%	50%
		Question 5	40%	60%
		Question 6	30%	70%
		Question 7	30%	70%
	Average		52,86%	47,14%
3	Ability to think original (Originality)	Question 1	40%	60%
		Question 2	40%	60%
		Question 3	30%	70%
	Average		36,67%	63,33%
4	Detailing ability	Question 1	40%	60%
		Question 2	60%	40%
		Question 3	50%	50%
		Question 4	30%	70%
	Average		45%	55%
	Overall Average		56,13%	43,87%

*b). Questionnaire data think creatively on students*

From the creative thinking questionnaire data on students it can be seen that the four indicators of creative thinking have been implemented in schools but are not optimally implemented. The first indicator regarding the ability to think fluently obtained the highest score of the other indicators, namely 3.72, which means that it is agreed that creative thinking is measured. While the second to fourth indicators have a lower average value. The overall average score for the four indicators of creative thinking is 1.66, which means that they do not agree with the measurement of creative thinking. So that it can be said that the ability to think creatively in the school has not been optimally exploited or accustomed to. To more clearly see the creative thinking questionnaire data on students can be seen in Table 6.

Table 6  
The results of a creative thinking questionnaire for students

No	Aspects of creativity/indicators	Question items	Total value	Average	Information
1	Fluent thinking ability	Question 1	140	4.66	Strongly agree
		Question 2	130	4.33	Strongly agree
		Question 3	120	4.00	Agree
		Question 4	110	3.67	Agree
		Question 5	90	3.00	Indecisive
		Question 6	80	2.66	Indecisive
		Average	111,66	3,72	Agree
2	Ability to think flexibly	Question 1	120	4.00	Agree
		Question 2	110	3.67	Agree
		Question 3	90	3.00	Indecisive
		Question 4	80	2.67	Indecisive
		Question 5	70	2.33	Don't agree
		Question 6	60	2.00	Don't agree
		Question 7	60	2.00	Don't agree
Average	84,29	2,81	Indecisive		
3	Ability to think original (Originality)	Question 1	60	2	Don't agree
		Question 2	40	1.33	Strongly disagree
		Question 3	30	1	Strongly disagree
		Average	43,33	1,44	Strongly disagree
4	Detailing ability	Question 1	40	1.33	Strongly disagree
		Question 2	50	1.66	Don't agree
		Question 3	40	1.33	Strongly disagree
		Question 4	30	1	Strongly disagree
		Average	40	1,33	Strongly disagree
Overall Average			49,82	1,66	Don't agree

#### *b. Interview Data*

##### *a). Creative thinking interview data on teachers*

In the following, interviews with teachers are presented as supporting data regarding the measurement of creative thinking skills in schools. Where from the 4 questions submitted, it can be seen that the teachers have not optimally manipulated the measurement of students' creative thinking or it can also be said that they rarely measure students' creative thinking. For more details about the results of the teacher interviews can be seen in Table 7.

Table 7  
Creative thinking interview data on teachers

No	The question	The answer	The reason
1	Do you often/always use cognitive tests?	Always use tests for cognitive measurement	The reason: cognitive is the main learning outcome that needs to be known from students. Therefore teachers always use tests to measure students' cognitive abilities. All subjects in school are always given a test.
2	What forms of test questions do you give in measuring student cognitive?	The forms of tests that are often used are essay questions and multiple choice tests	The reason: because the form of the test questions is often carried out in schools and can determine students' cognitive abilities. In addition, students are already familiar with the type of instrument, so they don't need difficult instructions.
3	Have you ever measured/honed and explored students' creative thinking abilities?	Yes, I have measured creative thinking ability, but I don't measure it often	The reason: to know the ability to think higher or deeper than the students. So that thus can know the ability of students' creative thinking
4	What indicators of creative thinking do you often use in measuring students' creative thinking?	The indicators used are fluent thinking, flexible thinking, original thinking and detailing	The reason: because it is an indicator of creative thinking that is often used. But in practice not all of these indicators are always used and also not all indicators have the same number of question items.

*b). Student creative thinking interview data*

In the following, data from interviews with students as supporting data regarding the measurement of creative thinking abilities in schools are presented. Where from the 4 questions submitted it can be seen that students have not optimally used measurements of students' creative thinking or it can also be said that students' creative thinking abilities are rarely empowered. For more details about the results of the student interviews can be seen in Table 8.

Table 8  
Data on students' creative thinking interviews

No	The question	The answer	Student opinion
1	Have you ever been given test questions by the teacher to measure cognitive?	Yes I have	The test questions given are of medium difficulty, and almost every subject is there to measure students' cognitive abilities
2	What forms of thinking tests have been given by the teacher?	The forms of tests that are often given are essay questions and multiple choice questions	The test questions given in almost every subject can be in the form of essay questions and multiple choice questions. We as students are very happy to use the instrument because we are used to working on test questions. Although the difficulty varies depending on the existing subjects.
3	Have you ever been measured/assessed for creative thinking by teachers?	Yes I have, but rarely do	I have measured creative thinking in the form of essay questions, and the questions are quite difficult because it measures higher order thinking. But not all subjects are measured creative thinking.
4	What subjects have measured creative thinking?	Mathematics and Natural Sciences subjects such as biology, physics and chemistry	Creative thinking test questions are good for measuring higher-order thinking, but these questions are quite difficult. So we tend not to be able to finish everything or little do.

## DISCUSSION

The research results show that the use of assessment for learning in schools is not optimal. This is evidenced by the teacher and student questionnaire data where out of 16 questions, only two questions answered that the instrument was often used, namely the test instrument. As for the other questions from numbers 3 to 16, the answer tends to be rarely done or sometimes done, this is related to non-test instruments, namely assessment for learning. In addition, it is also supported by interview data which

reveals that teachers often use test questions, both in the form of essay questions and multiple choice questions. Meanwhile, non-test questions or assessments for learning are rarely carried out, such as performance appraisals, assessments between groups, assessments between friends, self-assessments, observations, questionnaires, making journals, portfolios, products, etc. for learning in schools is not optimal. In the event that it is known that the use of assessment for learning will affect the learning process and also student learning outcomes which include higher-order thinking skills such as critical thinking, creative and others. This is as revealed by Nisrokha's (2018) research that authentic assessment can reveal in total how well students understand academic material, reveal and strengthen student competency mastery, such as gathering information, using resources, handling technology and thinking systematically, connecting learning with experience. themselves, their world and society at large, sharpen their thinking skills at a higher level as they analyze, integrate, and identify problems, create solutions and follow causal relationships, accept responsibility and make choices, relate and cooperate with others in making assignments, and learn to evaluate one's own level of achievement.

Mačiūnienė (2020) reveals that group self-evaluation is much more positive than evaluation by the teacher. The benefits of group self-evaluation tend to be embedded in 1) cultural contexts with dominant individual values; 2) the impact of business studies as a discipline, and: 3) challenges in implementing collaborative learning. According to Mansyur (2011) revealed that the emphasis on assessment for learning also lies in collaboration between teachers and students and between fellow students. Their collaboration is related to learning activities in an effort to make all students successful. In addition, Mansyur's (2011) research revealed that the application of the AfL-Model in learning mathematics improves: understanding, behavior, and students' mathematical abilities. Cobbold, C., & Wright, L. (2021) research shows that students do benefit from the provision of descriptive, fit for purpose feedback. As good educators we strive to provide education that modifies student thinking and behaviour positively and fosters generalized learning improvement and good formative feedback enables this. Thus, teachers' pedagogical competence plays a significant role in achieving successful learning by considering to link one variable to another (Otaya, et al, 2023).

This performance assessment is beneficial for both students, teachers, and parents. Performance assessment provides opportunities for students to be competent with themselves and students gain a real understanding of what they know and what they can do. In addition, performance assessments provide better and more complete information for teachers regarding students' understanding, difficulties, and progress. Performance assessment also makes learning more relevant to the real world and can be integrated with learning programs, so that performance assessments can provide support for learning (Zahrok, 2009).

Hart (1994) states that authentic assessment is an assessment carried out through presentation or appearance by students in the form of working on certain tasks or activities that have direct educational meaning. Authentic assessment provides opportunities for students to carry out authentic tasks that are interesting, useful, and relevant to students' lives. This task can make students innovative and creative because they have the opportunity to develop themselves, foster a more positive attitude towards school, learning activities, and themselves. Authentic assessments can sharpen higher order thinking skills when they analyze, synthesize, identify problems, create solutions, and follow causal relationships (Johnson, 2002).

From the data of this study, it can also be seen that students' creative thinking skills are also not well exploited or have not been implemented optimally. This is supported by teacher and student questionnaire data. Where in the teacher's questionnaire data, the average implementation of authentic assessment measurements is 56.13, meaning that it is still far from 100% or from optimal implementation, while student questionnaire data is obtained an average of 1.66, which means that it does not agree where the implementation of measuring creative thinking skills is still far from optimal.

In addition, interview data also supports the questionnaire data, where teachers have not optimally used the creative thinking ability instrument because of these four indicators not all of them have been implemented properly and are also rarely done. In addition, student interview data revealed that creative thinking skills have not been properly exploited because they do not often use creative thinking measurements and have not used all indicators of creative thinking optimally.

This is certainly a problem for students both in the learning process or the learning outcomes obtained. Because when viewed from the indicators of creative thinking, the ability to think creatively has 4 indicators that can empower creative thinking abilities such as fluent thinking, flexible thinking, original thinking, and the ability to detail. This is supported by several theories as expressed by Fitri and Septifiana (2013) stating that one of the high flexibility abilities of students is characterized by the ability of students to think of various ways to solve a problem. According to Munandar (2009) original thinking (originality) causes a person to be able to produce new and unique expressions or be able to find unusual combinations of ordinary elements. According to Munandar (2009) said that thinking in detail (elaboration) causes a person to be able to enrich and develop an existing idea.

Munandar (2009) further explains that every aspect of creative thinking has a relationship with a person's creative thinking ability. The aspect of daring to take risks has the characteristics of a person's behavior, namely not being hesitant because of ambiguity and having the courage to defend his ideas or opinions despite being challenged and criticized. This behavior will train students in original thinking (originality), so that students will be able to generate new ideas or expressions. The characteristic of the imaginative aspect is being able to think about what it would be like to do something that no one else has ever done. This behavior trains students in flexible thinking (flexibility), so that students can generate varied ideas, answers, or questions and are able to see a problem from different perspectives. The characteristic of the aspect of curiosity is always driven to know many things. This behavior is able to train students to think fluently (fluency). Students who have strong curiosity can produce ideas or ways of solving problems smoothly. The characteristic of feeling challenged by diversity is always being driven to solve difficult problems. This behavior is able to train students in thinking in detail (elaboration), so that students are able to solve a problem in more detail. The characteristic of the aspect of respect is always respecting the ideas or work of others. This behavior is able to train students in thinking in detail (elaboration), so that students are willing or want to add other people's ideas or products in more detail to make it more interesting.

Creativity means the ability to generate unique new responses to situations, and having the broad insight to recognize and take useful new approaches. This involves not only having new ideas yourself, but also your ability to recognize good ideas when presented from other sources (Shirbagi, 2018). Eleven attributes, providing basic models for self-development: command of basic facts, relevant professional knowledge, continuing sensitivity to events, analytical, problem-solving and decision/judgment-making skills, social skills and abilities, emotional resilience, pro-activity-inclination to respond purposefully to events, creativity, mental agility, balanced learning habits and skills (Shirbagi, 2018).

## **CONCLUSION**

Based on the results of the research obtained, it can be concluded that the use of assessment for learning is not optimal or is rarely carried out in the school, both from teacher and student questionnaire data and also supported by teacher and student interview data. Where teachers tend to use test instruments in the form of essays and multiple choice questions compared to non-test questions or assessments for learning. So this will have an impact on students' thinking skills such as creative thinking. The research data also concludes that students' creative thinking skills, which are also not optimal, are tricked or rarely done, this can be seen from the teacher's questionnaire data with an average of 56.13% in the sense that it is still not optimal to apply the measurement of creative

thinking skills, while the student questionnaire data with an average an average of 1.66 with the category of disagree, which means this is due to not being accustomed to using creative thinking instruments. In addition, it is also supported by interview data that the four indicators of creative thinking have not been optimally exploited in the school.

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#### **REFERENCES**

- Black, P., & William, D. (2006). *Assessment for learning in the classroom*. In J. Gardner (Ed.). *Assessment and learning*. London, UK: SAGE Publication Ltd
- Budiyono. (2010). *Peran asesmen dalam peningkatan kualitas pembelajaran*. Makalah disajikan dalam Seminar Nasional, Pendidikan Matematika, Universitas Sebelas Maret, tanggal 5 Mei 2010.
- Cobbold, C., & Wright, L. (2021). Use of Formative Feedback to Enhance Summative Performance. *Anatolian Journal of Education*, 6(1), 1 09-116.
- Corebima, D. (2008). *Naskah tentang asesmen autentik*. Makalah Disajikan dalam Pelatihan Guru Biologi Se-kota Malang. FKIP Jurusan Biologi, Universitas Muhammadiyah Malang.
- Febrianingsih, F (2022) Kemampuan Berpikir Kreatif Siswa dalam Memecahkan Masalah Matematis. *Mosharafa: Jurnal Pendidikan Matematika*, 1(1), 119-130.
- Filsaime D K 2008. *Menguak Rahasia Berpikir Kritis dan Kreatif* . Jakarta: Prestasi Pustaka.
- Fitri, S. G., & Septifiana, V. (2013). *Kreativitas siswa dalam pembuatan model struktur 3d sel pada pembelajaran subkonsep struktur dan fungsi sel*. Seminar dan Rapat Tahunan Bidang Ilmu MIPA BKS PTN Barat. 1, pp. 73- 85. Bandar Lampung: FMIPA UNILA.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education 8th edition*. New York: Mc Graw Hill.
- Frey, B.B., Schmitt, V .L., Allen, J.P. (2012). Defining authentic classroom assessment. *Journal Practical Assessment, Research & Evaluation, University of Kansas*, 17(02), 1-18, diakes Januari 2013.
- Hart, Diane. 1994. *Authentic Assessment A handbook for Educators*. California, New York: Addison Wesley Publishing Company.
- Hu W, Adey P 2010. *A Scientific Creativity Test For Secondary School Students*. *Int. J. Sci. Educ.* 24, L389-403.

- Johnson, D.W. 2002. *Meaningful Assessment A Manageable and Cooperative Process*. USA: Allyn and Bacon.
- Leen, C.C., Hong, K. F. F. H., & Ying, T.W. (2014). *Creative and critical thinking in Singapore Schools*. Singapore: Nanyang Technological University.10.1016/j.procir.2014.02.001.
- Listiani, T (2020) Penggunaan model PACE dalam pembelajaran geometri topik bangun ruang. mosharafa: *Jurnal Pendidikan Matematika*, 9(3), 407-418.
- Mačiūnienė R.N; Minelgaite, I; Gudjonsson, S. 2020. deficit in propriety? cooperative learning and group self-evaluation in higher education. *Pedagogika / Pedagogy*, 139(3), 73–87.
- Mansyur (2011). Development of an assessment-for-learning model in mathematics learning<sup>SEP</sup> in junior high schools. *Jurnal Penelitian dan Evaluasi Pendidikan*, 15(1), 71-91.
- Mansyur, (2011). Pengembangan Model Assessment for Learning pada Pembelajaran Matematika di SMP. *Jurnal Penelitian dan Evaluasi Pendidikan*, 15(1), 71-91.
- Morocco, C. C., Aguilar, C. M., & Bershada, C. J. (2008). *Supported literacy for adolescents: Transforming Teaching and Content Learning for The Twenty-First Century*. San Francisco: Jossey-Bass A Wiley Imprint.
- Munandar, U. (2009). *Pengembangan kreativitas anak berbakat*. Jakarta: Depdikbud dan Rineka Cipta.
- Nisrokha, (2018). Authentic assessment (penilaian otentik). *Jurnal Madaniyah*, 8(2), 209-229.
- Otaya, L. G., Anwar, H., Yahiji, K., & Rahmawati. (2023). The assessment of fit data model feasibility of the teachers' pedagogic competency variables. *International Journal of Instruction*, 16(2), 909-926. <https://doi.org/10.29333/iji.2023.16248a>.
- Purnomo, Y. W. (2013). *Keefektifan penilaian formatif terhadap hasil belajar matematika mahasiswa ditinjau dari motivasi belajar*. Makalah, dipresentasikan dalam Seminar Nasional Matematika dan Pendidikan Matematika dengan tema "Penguatan Peran Matematika dan Pendidikan Matematika untuk Indonesia yang Lebih Baik" pada tanggal 9 November 2013 di Jurusan Pendidikan Matematika FMIPA UNY.
- Robles, M.M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business Communication Quarterly*, 75(4), 453–465.
- Papp, KK., Huang, G.C., Clabo, L.L.M., Delva, D., Fischer, M., Konopasek, I., Schwartzsein, R.M., & Gusic, M. (2014). Milestones of critical thinking: a developmental model for medicine and nursing. *Academic Medicine*, 89(5), 715-720.
- Shirbagi, N. 2018. An assessment of skill needs of a sample of iranian school principals based on "successful leaders' self-development model". *Pedagogika / Pedagogy*, 130(2), pp. 76–91.
- Siswono, T. Y. (2007). Konstruksi Teoritik Tentang Berpikir Kreatif Siswa dalam Matematika. *Jurnal Pendidikan Forum Pendidikan dan Ilmu Pengetahuan*, 2(4), 01-10.
- Stiggins, R.J. (1994). *Student centered classroom assessment*. New York: Macmillan College Publishing Company.
- Sugiyono, (2012). *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. Bandung: Alfabeta.
- Zahrok, 2009. Asesmen Autentik dalam Pembelajaran Bahasa, *Jurnal Sosial Humaniorah*, 2(2), 166-180.