THE IMPORTANT OF CREATIVE THINKING ABILITY IN ELEMENTARY SCHOOL STUDENTS FOR 4.0 ERA

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Abstract. The art of creative thinking needs to develop and taught to students because by thinking creativity, students are able to solve the problem they have, the students become more independent, creating reliable and talented human resources, and skillful in the future. The purpose of this research is to find out the creative thinking ability in the mathematic aspect of Elementary School Mardi Rahayu 02 Ungaran students. The data collection was done by giving four questions of students' creative thinking ability on KPK and FPB materials along with with interview the students. The research was done to 31 students of class IVC. The method used is qualitative descriptive method. Creative thinking ability is important in Era 4.0 where the development of knowledge becomes really fast. The average achievement of every creative thinking indicator is fluency 45,8% and flexibility 58,3%, whereas originality and elaboration indicator reaches 33,3%. The conclusion from this research is that the creative thinking ability of Elementary School Mardi Rahayu 02 Ungaran students need to improve.

Keywords: creative thinking skills, 4.0 Era.

INTRODUCTION ~ These days, Industry Revolution is known by Industry Revolution 4.0. there is four industry revolution until today. The first industrial revolution was marked with the steam machine invention in 1784. The second industrial revolution was snown by electricity invention so that machines production was powered by electricity and they could have mass production. It happened at the end of 19th century. In 1970, there was vast development in sensor technology, interconnection and data analysis. The use of computing technology became the sign of the third industrial revolution. The fourth industrial revolution created the term for industry 4.0. industry revolution 4.0 was called a disrupted innovation era where innovation develops really fast and able to create a new industry.

There are five principals in the disruptive era: 1. Step out from your comfort zone, 2. Clear working achievement and target, 3. Focus on a valuable and impactful on the activity, 4. Accept and give good quality feedback, and 5. The strong mentality (Koran Edukasi, 2019). The five principals in the disruptive era have to be mastered by someone in order to be capable of succeeding and live well in society.

Industry Revolution 4.0 has to be balanced with qualified human resources creation. There are some important aspects of the Industry Revolution 4.0. the are knowledge, technology, economy, social, and politic aspect (Prasetyo & Sutopo, 2018). These

aspects have to be improved and developed. The improvement and development aspects are expected to give a better life and answer the era requirements. One of the developments of the knowledge aspect is by improving education quality.

Education is required to have changes in a better way to fulfill Industry 4.0. students must have the ability to think critically and creatively, the ability to collaborate, and communicate which are known as 4C (Suwardana, 2018). Mathematics subject lesson is one of the school subject lessons. The aspect of flexible thinking ability is one of the aspects taught in mathematics (Rahmazatullaili, Zubainur, & Munzir, 2017). Flexible thinking is one of the creative thinking characteristics

Creative thinking is an activity to make new opinions or ideas (Rugiero, 1998). Creative thinking is an ability to create different ideas, not common, original with a correct and exact result (Andiyana, Maya, & Hidayat, 2018). Creative thinking is closely related to the alternative to problem-solving (Larasati, Santosa, & Sari, 2018). The ability to think creatively makes someone becomes easier to face and overcome problems (Happy & Widjajanti, 2014).

Three benefits of creativity include (Munandar, 2004):

1) Important things to personal success and Indonesia development. The role of teachers, parents, and society determine someone's creativity.

2) Human resources development takes Indonesia to be an equal position as

other countries. In the case, there are two things needed, great talent development and creativity development so that they can be found and recognized and also stimulated from easy age.

3) The needed people with fresh opinions and ideas in the workplace.

The ability of creative thinking can be increased. The improvement of creative thinking ability is increasing students' ability in understanding problems, fluency, flexibility, and renewal in problem-solving (Siswono, 2004). Students are able to understand problem solving found by the students in getting the correct and logical answer. Students have flexibility if they are whereas the renewal is shown by the methods that the students find. It is a unique and different method than the previous one.

Creative thinking can be noticed in some aspects. Aspects of creative thinking are fluency, flexibility, originality, and elaboration (Munandar, 2016: 192). Creative thinking characteristics are (Munandar, 2016):

1) Fluency is the ability to produce many opinions or answer which are relevant to the fluency way of think.

2) Flexibility is shown by similar opinions that can change the way or approach and the different ways of thinking.

3) Originality is the ability to answer in an uncommon way, which is different from the others, and the answer given is different from most people.

4) Elaboration is the ability to develop, increase and enrich an opinion carefully to become more interesting.

Table 1. Details of Creative Thinking Ability Test

Creative thinking aspect	Indikator	No. Soal
Fluency	Students are able to give many answers in solving problems given.	3
Flexibility	The student is able to produce various ways of solving problems.	2
Originality	Students are able to give different answers.	1
elaboration	The student is able to express in a more specific way of answering the problem.	4

Creative thinking must be developed in education so that high creativity human resources can be achieved (Juliantine, 2019). Teachers must be able to be a facilitator of students in developing creative thinking. The key to learning a better way for students in the teacher's teaching method (Azhari & Somakim, 2014). Teacher's ability in teaching and the method of choosing become the cause of the not effective and boring. Creativity appears if the teachers give the students a chance to solve the problems in anyways, using challenging problem, the problem given is an open problem and place students as the inventor (Siswono, 2007). Based on the explanation above, we can conclude that creative thinking ability is an alternative way to create different ideas, uncommon, and original. By thinking creatively, we hope that the students can be faced with and solve the problems in the future easily.

To describe the ability of creative thinking of the students of Elementary School Mardi Rahayu 02 Ungaran, the researcher will use four aspects or indicators to describe students' creative thinking which includes fluency, flexibility, originality, and elaboration.

METHOD

The research method is qualitative descriptive. The research subject is 31 students in class IVC in Elementary School Mardi Rahayu 02 Ungaran. The research was held in the first-semester academic year 2019/ 2020. The data collecting technique used the creative thinking test and interview. The instruments are four essays of students' creative thinking ability tests. Six research subject is chosen with the interview application.

RESULTS

The data collecting technique is by using test instruments in the form of four numbers of essays or questions. It requires the validity test on the instrument task. The test instrument instated to be valid if it measures the right object. The instrument examination using SPSS 22. based on the correlation test there is Sig. < 0,05 score for question number one until four (Table 2). It means that all creative thinking ability tests questions are valid and continue to reliability test for all four questions.

Table 2. Validity Test Result

TOT	Pearson Correlation	-.390*	.676**	.760**	.674**	.825**	1
	Sig. (2-tailed)	.030	.000	.000	.000	.000	
	N	31	31	31	31	31	31

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The reliability is similar to the consistency measurement questions. It means that if the questions are used several times to measure the same object ability which also has the same result. The reliability test uses SPSS 22. The result of the statistic reliability test is Sig. > 0,6, it shows that the four questions are reliable (Table 3).

Table 3. Reliability Test Result

Reliability Statistics

Cronbach's Alpha	N of Items
.707	4

Table 4. Description of Creative Thinking Indicators

Student Code	Originality	Flexibility	Fluency	Elaboration
001	3	4	3	4
002	1	4	2	1
003	1	1	3	1
004	1	3	1	0
005	1	1	1	1
006	1	1	1	1
Scor	8	14	11	8
Persentase (%)	33,3%	58,3%	45,8%	33,3%

The creative thinking ability result is table 4. The question given includes four creative thinking indicators, such as fluency, flexibility, originality, and elaboration. The creative thinking percentage average is 42,7% include originality indicator 33,3%, flexibility 58,3%, fluency 45,8%, and elaboration which has the same score as originality indicator, 33,3%.

DISCUSSION

Based on table 4 which shos the originality indicator on question number one and elaboration indicator on question number four, they have the same percentage that is 33,3%. Flexibility indicator on question number two with 58,2% and fluency indicator on question number three with 45,8%. If we see the percentage from the four creative thinking indicators, there is only one indicator that has a more 50% percentage, it is a flexibility indicator. As it can be said that the creative thinking ability of the students is still slow. It acquires to be improved.
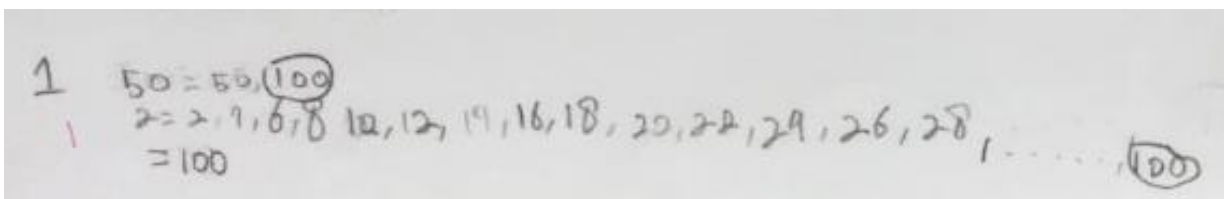
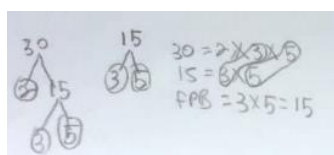**Pic 1. Student's Answer for Question Number 1**

Question number 1

Tentukan dua pasang bilangan yang berbeda dengan KPK 100!

Decide two pairs of numbers that have different KPK 100!

Picture 1 shows that the answer to the students is not precise. The student only gives a pair of numbers with KPK 100. The question is clearly stated that the student has to give two pairs of numbers. From all the samples, almost all of all students only give a pair of numbers but the KPK counting is not correct. Based on the interview result, the students explain that they choose the numbers by predicting two numbers which can divide 100 and prove it. KPK from the written number is actually not 100, but 50. When they are reminded of the KPK concept, they explain that they did not elaborate on it well in doing the questions and they have not checked the written answer.

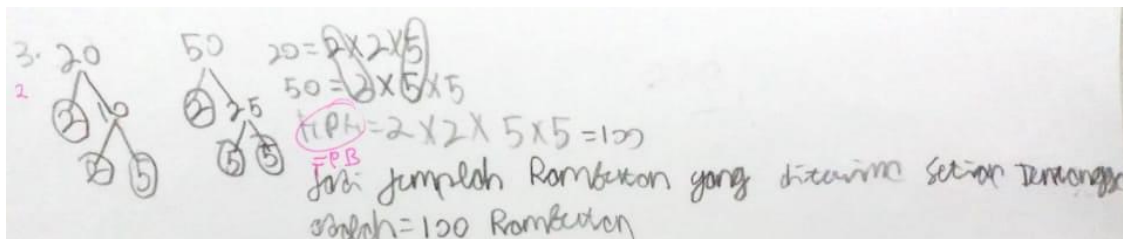**Pic 2. Student's Answer Number 2**

Question number 2

Aku adalah sebuah bilangan. Aku mempunyai seorang teman. Temanku adalah bilangan bernilai 30 sedangkan nilai bilanganku lebih kecil. Jika FPB dari aku dan temanku adalah 15, tentukan bilanganku!

I am a number. I have a friend. My friend is a number worth 30. While my number score is smaller. If my and my friend FPB is 15, what is my number?

The student's answer to picture 2 shows that the student has tried to find the unknown number. Then the student has an idea to prove, whether the number has been correct or not. For all the samples, most students give various answers. Based on the review result, the student answer that they decided that the number by predicting number which has FPB 15. The students have not given the conclusion of the given answer so that their score is not perfect. But there are some students who understand the question so that they answer it by looking for the prime factor of 30.

Pic 3. Student's Answer of Number 3

Question number 3

Ibu mempunyai 20 jeruk dan 50 rambutan. Jeruk dan rambutan akan dibagikan kepada tetangga dengan jumlah sama banyak. Berapa jumlah rambutan yang diterima setiap tetangga?

Mother has 20 oranges and 50 rambutans. Oranges and rambutans are going to share with the neighbors with the same amount. How many rambutans will be accepted by every neighbor?

The student' answers on question number 3 show that they have factorized the number correctly. But, the complete concept is the FPB whereas the students write the KPK concept. That's why the answer is not correct. Based on the interview, the students explain that they are not understood the use of the KPK concept and FPB in the essays. Others students also show the same way by giving average answers from the counting concept of KPK.
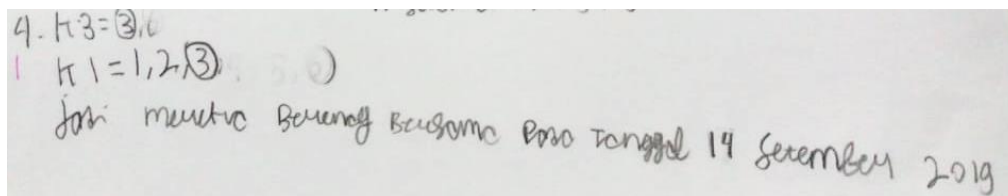
Soal nomor 4

Lina dan Vivin mengikuti les berenang. Mereka mengikuti les berenang dengan

waktu yang berbeda. Lina 3 hari sekali dan Vivin seminggu sekali. Jika terakhir kali mereka les berenang bersama pada tanggal 11 September 2019, kapan mereka akan berenang bersama lagi?

Lina and Vivin joint swimming course. They join the course at a different time. Lina practices twice a week and Vivin once a week. If the last time they practice together on September 11th, 2019, when will they practice swimming together again?

The student's answer on question number 4 shows that they have not understood the given question. Students answer the question directly without thinking about the correct steps. The answer sample approximately gives the same answer, without realizing that there is a time to conversion from week to days. Based on the interview result, the students directly work on the question by looking at the number provided. There is a time conversion that has to be done first, but they say they did not elaborate enough in reading the question. As a result, the answer given is not suitable for the question purpose.

Pic 4. Student's Answer of Number 4

CONCLUSION

Based on the research, the mathematical creative thinking ability of Elementary School Mardi Rahayu 02 Ungaran on KPK and FPB material is still slow. The average percentage of creative thinking is 42,7%for the percentage of every indicator is originality 33,3%, flexibility 58,3%, fluency 45,8%, and elaboration 33,3% which is the same as the originality indicator. The highest presentations are flexibility and fluency indicators while the lowest is originality and elaboration indicators. On the originality indicator, the students can not find the pair of numbers with KPK numbers yet. But on the elaboration indicator, the student has not understood that they need to converse the time first. The students' mathematic creative thinking ability needs to be improved.

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