Analysis of Students' Creative Thinking Skills in Biology Subjects at Senior High School 2 Lambandia

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Abstrak

Salah satu hal yang perlu diperhatikan dalam membangun generasi cerdas adalah pendidikan. Untuk membangun generasi ini diperlukan keterampilan abad 21, salah satunya keterampilan berpikir kreatif siswa. Keterampilan berpikir kreatif merupakan hal penting yang dibutuhkan guna membangkitkan hal yang baru dalam pemikiran setiap orang untuk menyelesaikan suatu permsalahan. Penelitian ini dilakukan untuk mendeskripsikan Keterampilan berpikir kreatif siswa pada mata pelajaran biologi di SMA Negeri 2 Lambandia Kolaka Timur Sulawesi Tenggara Indonesia. Subjek penelitian ini terdiri dari 59 siswa yang merupakan seluruh siswa di SMA Negeri 2 Lambandia. Instrumen yang dipakai berupa tes uraian dan pedoman wawancara. Berdasarkan penelitian yang telah dilakukan memperlihatkan hasil bahwa dari 59 siswa SMA Negeri 2 Lambandia diperoleh hasil tes keterampilan berpikir kreatif siswa- (1) Persentase pada indikator kelancaran sebesar 64% (2) persentase indikator fleksibilitas 69% (3) persentase indikator keaslian 66% (4) persentase indikator detailing 66%. Kesimpulan keterampilan berpikir kreatif siswa kelas X, XI, XII SMA Negeri 2 Lambandia masih rendah sehingga masih perlu perhatian lebih pada keterampilan tersebut.

Kata kunci— *Keterampilan berpikir kreatif; Siswa; pelajaran biologi*

Abstract

Education is an important component in building a smart generation. To build this generation, 21st century skills are needed, one of which is students' creative thinking skills. Students' creative thinking skills is the ability to generate new ideas or ideas in producing a way in problems, even producing new ways as alternative solutions. This research purpose to describe students' creative thinking skills in biology subjects at Senior Hight chool 2 Lambandia, East Kolaka, Southeast Sulawesi, Indonesia. The subjects of this study consisted of 59 students in all grades at Senior High School 2 Lambandia. The instrument used is a test in the form of a description and interview guidelines. The results showed that, out of 59 students at Senior High School 2 Lambandia, the results of the students creative thinking skills test were obtained (1) The percentage on the fluency indicator is 64% (2) the percentage on the flexibility indicator 69% (3) the percentage on the authenticity indicator 66% (4) the percentage on the detailing indicator 66%. Conclusion creative thinking skills of students in grades

X, XI, XII At Senior High School 2 Lambandia need to pay attention, because students' skills are still classified in the low category.

Keywords—*Creative Thinking Skills; Students; Biology Subject*

1. PENDAHULUAN

Education is an important component in building a smart generation. Education can also be used as a vehicle to improve human resources in order to create a good civilization. Education is also important for increasing all the potential and skills possessed by students, and this is stated in the Law concerning the Indonesian national education system [1,2]. The learning process is a series of activities that involve teachers and students, so that students can process information, ideas, skills, values and ways of thinking to solve a problem and achieve learning goals. learning that occurs in the classroom must be student-centered. In the implementation of learning, students need creativity to achieve the expected educational goals [3]. So far, learning activities in secondary schools still emphasize cognitive change but have not maximized thinking skills of students who fall into the high category, one of them that is students' creative thinking ablities. Students' creative thinking is an ability related to a person's way of developing creativity and ways of thinking to solve a problem, so that students can support their learning success [4,5].

Creative thinking skills are an important component that students need to have, especially in the teaching and learning process according to Siswono [6]. Who suggests that the ability to think creatively can be assessed from 4 indicators, namely fluency, flexibility, authenticity, detailing. If students' creative thinking skills are low, they are able to show many different alternative answers for each problem. According to Listiani [7] As part of creative thinking skills, students are expected to be able to understand, master and solve problems. The ways in which students express their ideas or new solutions are certainly different. This is because the abilities possessed by each student are different. With creativity in learning, students are expected to dare to solve problems in their own way [8].

Facts on the ground show that students' creative thinking skills have not developed well in all aspects, one of which is research conducted by Sumiana [9] test results from initial observations conducted at schools stated that students' creative thinking levels were in the low category. This shows that students have an ordinary level of curiosity in solving creative thinking problems, so students give simple answers according to question requests.

The same thing also happened at senior high school 2 Lambandia. Based on observations were made by observing the discussion process in the teaching and learning process in the classroom to see students' creative thinking skills, and interviews conducted with teachers and students regarding students' creative thinking skills, students' creative thinking abilities that were still not maximally empowered while the demands of the 21st century needed to improve these abilities. This is based on the teacher's statement in the initial interview process which states that students' skills have not developed properly, and this is supported by the results of observations of the discussion process in class students seem to be still unable to develop ideas creatively. However, it is not yet known for certain which indicators of creative thinking are lacking in students at senior high school 2 Lambandia. Therefore, it is important to

know and analyze the extent to which students' creative thinking skills, especially those at senior high school 2 Lambandia, can adapt to the demands of the 21st century today. Therefore, the authors are interested in taking the title of the study with the title "Analysis of Students' Creative Thinking Ability in Biology Subjects at senior high school 2 Lambandia". This research is important to do in order to be able to see the extent of students' thinking skills at senior high school 2 Lambandia, as well as find out in detail what indicators of creative thinking skills still need to be improved and become a benchmark for making policies in choosing the right learning model to use.

2. METODE

2.1 Time and Place of Research

Time of this study was carried out in January-February 2022. This study took place at Senior High School 2 Lambandia, Lambandia District, East Kolaka Regency.

2. 2 Research subject

The subjects of this study consisted of 59 people consisting of 14 students in class X, 24 students in class XI, and 21 students in class XII at Senior High School Negeri 2 Lambandia in 2022. The subjects in this study were people involved in research and can provide information or information as a source of data.

2. 3 Research Procedure

The procedures in this study, including the following:

1. Conducted a visit to Senior High School 2 Lambandia to ask permission for research as well as conduct initial observations Preliminary observations were made to see the initial conditions in the field and the problems that occurred in the field. Observations made in the form of direct observation in class to see the teaching and learning process and discussions conducted by students.
2. Prepare test sheets for students' creative thinking skills.
3. Testing students' creative thinking abilities and interview guidelines.
4. Analyze the test results.
5. Selecting research subjects to be interviewed.
6. Carry out interviews.
7. Manage and analyze the data that has been collected.
8. Compile research results.

2. 4 Research Instrument

The instrument in this study was a written test which was prepared using the items of creative thinking ability. The indicators of students' creative thinking skills in this study are: 1) Fluency, 2) Flexibility, 3) Originality, 4) Elaboration [4].

The data analysis research that will be used is descriptive analysis technique. Activities in data analysis are:

1. Data reduction is a step that refers to the process of transforming raw data written in field data, selecting data and simplifying data and grouping data.
2. The presentation of the data is complete and the analysis which includes analysis of test results and analysis of interview results as well as being reduced is

directly considered in drawing conclusions. Data presentation is carried out by bringing up organized and categorized data sets that allow conclusions to be drawn.

3. The conclusions based on data presentation with the aim of obtaining conclusions about students' creative thinking skills.

Students' creative thinking ability is assessed based on indicators of creative thinking ability, namely fluency, originality, flexibility, and elaboration. The average achievement of students' creative thinking skills for each section on creative thinking skills in table 1 is measured based on the assessment of students' creative thinking skills.

Table 1. Category of students' creative thinking skills [19]

Score	Catagory
Score ≤55	Low
55 > Score ≤ 75	Medium
Score ≥ 75	High

2. 5 Research Library

1. Tanjung, Doriamas, et al (2022) in his research was found that the elaboration aspect was 44.44%. Students who get a score of 80 are 33.33%, and students who get a score of 65 are 22.22%. The originality aspect is 33.33%. Students who get a score of 60 are 27.78%, and students who get a score of 45 are 38.89%. The aspect of flexibility is 55.56%, students who get a score of 65 are 33.33% and students who get a score of 40 are 11.11% and aspects of fluency are 38.89%. In collecting the data the researcher used 3 techniques including observation, testing and documentation [10].
2. Wijayanti, Murni Dewi, et al (2022) in her research shows that The creative thinking skills of PGSD students can be categorized as low to medium, although there are already some students who have high levels of creative thinking skills. The dimension of creative thinking skills with the highest average percentage is elaborate thinking skills and the lowest is originality. Creative thinking skills are influenced by several things, among others are intelligence, knowledge, mindset, personality, motivation, and environment. The implication of this research is to choose the right science learning model so that it can improve creative thinking competence of PGSD students [11].
3. Amin, Muhamad, et al (2022) in his research was found that one approach that can improve creative thinking skills is the STEM approach. and in the focus of IPA as many as 20 data consisting of several sub-categories including physics, geography showing a RE-Model of 59%, which means the category is moderate [12].

3. HASIL DAN PEMBAHASAN

Based on the results of the students' creative thinking ability test using the instrument of description questions conducted at Senior High School 2 Lambandia class X, XI, and class XII showed varying results. The descriptive data shown on table 2:

Table 2. Data Analysis of Students' Creative Thinking Skills

Score Range	Catagory	Frequency	Percentage
Score ≤ 55	Low	27	46 %
55 > Score ≤ 75	Medium	26	44 %
Score ≥ 75	High	6	10 %

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It relates to several indicators, namely fluency, flexibility, authenticity, and detailing. Based on table 1, it shown that from 59 students on the part of students' creative thinking skills, from the table it can be concluded that the level of student abilities has been seen based on the results obtained from the description test.

Table 3. Students' Creative Thinking Ability in Every Indicator

		Fluency		Flexibility		Originality		Elaboration	
Catagory	**Range Score**	**Total students**	**%**	**Total students**	**%**	**Total students**	**%**	**Total students**	**%**
Low	0-55	38	64 %	41	69 %	39	66 %	39	66 %
Medium	56-75	17	29 %	13	22 %	17	29 %	18	31 %
High	75-100	4	7 %	5	8 %	3	5 %	2	3 %
Total		59	100	59	100	59	100	59	100

From table 3, it is seen that the authenticity indicator has the highest percentage. In this indicator on the creative thinking skills of students, which amounted to 39 students with a percentage of 5% in the category of creative thinking abilities of students who were 17 students with a percentage of 29% while the category of students' creative thinking ability were high with a percent of 5 students with a percentage of 8%.

From the data of this research, it was show that the creative thinking skills of students in grades X, XI, XII at Senior High School 2 Lambandia was still low with 45.14 results the cause was still lacking. This is caused by not paying attention and not asking questions when the teacher explains the material in the classroom, so that students' understanding is lacking, therefore most students' thinking skills are still low because in learning students pay less attention to the material presented by the teacher, therefore it is important to improve the mindset of students receiving lessons. students who lack focus can be caused by various things, including a lack of student learning motivation, students are less interested in the material and learning methods used. In addition, the low of each point of students' creative thinking skills is due to the learning

process being carried out that does not support improving every indicator of students' creative thinking.

The results of the students' answers that have been analyzed show that in general students complete each question given. In the questions, information has been given that students are request to them to answer the questions right and are accompanied by giving reasons and explanations for each answer. From the answers that have been answered, it can be seen that the fluency category is still low. This shows that students are not yet proficient in generating diverse and precise ideas or ideas for the questions given. While the medium category can show that students generally have the ability to generate ideas or ideas generated from their own thoughts so that they can provide many answers. In the high category it can indicate that the problems encountered can be solved by generating answers, ideas or thinking of more than one answer. Most students who have a low category, because they pay less attention to the teory from the teacher, so that their thinking is still lacking and needs to be improved [13]. The indicator of flexibility is dominantly still in the low category, from this result by describing the weak ability of students to see or consider things from various points of view [14]. While the medium category students are able to solve problems well and their way of thinking needs to be improved so that the material that has been given is easier to understand and their way of thinking tends to be more active in receiving lessons. In the high category, it can be show that students have good skilss in providing answers and explanations in detail. Most students have a low category because their understanding in capturing material is still lacking, so creative thinking needs to be developed again [15].

The authenticity indicator also shows a low category for most students. This shows that students' understanding in learning is still lacking, so most students do not understand the questions given to the teacher, so students' thinking needs to be improved again. While in the medium category students have good abilities in solving problems that have been given according to the opinion Armandita [16] in the skills to think creatively with the medium category in learning that makes students comfortable or not pressured, so that they can challenge an open-ended question and make students can express the ideas and ways of thinking of students in the classroom. In the high category students can produce answers that are presented in their own language according to Samura, the high percentage can show that students already have the ability to solve the questions well that have been given. Most students have a low category because they do not understand the material that has been conveyed, so that their understanding still needs to be improved, during the learning process [16].

The indicator elaboration in the low category can indicate that students have few problems in solving the problems that have been given and the lack of student achievement in understanding so that it is necessary to improve the way students think while receiving the lessons delivered [17]. In the medium category, students have a good understanding in answering the questions that have been given and they have good creative thinking skills, in accepting a lesson, and have a good understanding of what the teacher has conveyed during the process of learning in class. In the high category students have an comprehension or ability to answer questions well that have been given according to [3]. A high indicator is a student who is included in the very creative category, indicating that the student has been able to formulate a detailed problem solving, then combine several ideas. Most students have a low category, because understanding is still lacking, and they do not catch the lessons that have been given to the teacher, therefore most students have a low category because

their way of thinking is still lacking in learning, and the learning process needs to be improved.

Students' creative thinking ability is included in the low category. This can be shown from the number of students who have the skills to think creative was low. Factors that affect the skills to think creative is the lack of students' ability to the material being studied because there is no effort made by students in solving the questions given to the teacher. Students expect a solution from the teacher [18].

4. KESIMPULAN

Based on the resuls of data analysis and discussion of the creative thinking skills of students in grades X, XI, XII at Senior High School 2 Lambandia, creative thinking skills are still lacking for the fourtindicators, Fluency, Flexibility, Authenticity, and Elaboration. students' creative thinking skills can be influenced by several things, including student motivation in the learning process and the learning model used whether it can support the improvement or empowerment of creative thinking or not

DAFTAR PUSTAKA

[1] Ramadhani, S., & Khairuna, K. (2022). Pengaruh Model Problem Based Learning Berbantuan Fishbone Materi Biologi terhadap Kemampuan Berpikir Kreatif Siswa. *Jurnal Basicedu*, *6*(5), 8405–8413. https://doi.org/10.31004/basicedu.v6i5.3840

[2] Astra, R. R. S., Vilela, A., Pereira, J., & Zou, S. (2022). Pengaruh Gender Terhadap Kemampuan Berpikir Kreatif Siswa Smp Yang Telah Memperoleh Pendekatan Rme. ... *Matematika Inovatif)*, *5*(1), 307–316. https://doi.org/10.22460/jpmi.v5i1.307-316

[3] Anggraini, E., & Zulkardi, Z. (2020). Kemampuan Berpikir Kreatif Siswa dalam Memposing Masalah menggunakan Pendekatan Pendidikan Matematika Realistik Indonesia. *Jurnal Elemen*, *6*(2), 167–182. https://doi.org/10.29408/jel.v6i2.1857

[4] Meika, I., & Sujana, A. (2017). Kemampuan Berpikir Kreatif Dan Pemecahan Masalah Matematis Siswa Sma. *Jurnal Penelitian Dan Pembelajaran Matematika*, *10*(2), 8–13. https://doi.org/10.30870/jppm.v10i2.2025

[5] Putri, Y. A., & Zulyusri. (2022). Meta-Analisis Pengaruh Model Project Based Learning Terhadap Kemampuan Berpikir Kreatif Siswa pada Pembelajaran Biologi. *Bioeduca: Journal of Biology Education*, *4*(2), 1–11.

[6] Samura, A. O. (2019). Kemampuan Berpikir Kritis dan Kreatif Matematis Melalui Pembelajaran Berbasis Masalah. *MES: Journal of Mathematics Education and Science*, *5*(1), 20–28.

[7] Akhdiyat, A. M., & Hidayat, W. (2018). Pengaruh Kemandirian Belajar Matematik Siswa Terhadap Kemampuan Berpikir Kreatif Matematis Siswa SMA. *Jurnal Pembelajaran Matematika Inovatif*, *1*(6), 1045–1054. https://doi.org/10.31004/joe.v2i3.434

[8] Nurafipah, A., Juhanda, A., & Windyariani, S. (2022). Analisis Kemampuan Berpikir Tingkat Tinggi Peserta Didik SMP Menggunakan Model Pembelajaran Conceptual Change Pada Materi Sistem Ekskresi. *BIODIK: Jurnal Ilmiah Pendidikan Biologi*, *08*(4), 59–64. https://online-journal.unja.ac.id/biodik

[9] Eviliasani, K., Hendriana, H., & Senjayawati, E. (2018). Analisis Kemampuan Berpikir Kreatif Matematis Ditinjau Dari Kepercayaan Diri Siswa Smp Kelas Viii Di Kota Cimahi Pada Materi Bangun Datar Segi Empat. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, *1*(3), 333–346. https://doi.org/10.22460/jpmi.v1i3.p333-346

[10] Tanjung, D., Saputra Tanjung, H., & Aminah Nababan, S. (2022). Analisis Kemampuan Berfikir Kreatif Siswa Melalui Pendekatan Pembelajaran Science, Technology, Engineering And Mathematics (STEM) Di Sd Joring Lombang. *Bina Gogik*, *9*(1), 198–208.

[11] Wijayanti, M. D., Suryandari, K. C., & Wahyudi, A. B. E. (2022). Analisis Keterampilan Berpikir Kreatif Mahasiswa PGSD Berbasis Etnosains Pada Materi Energi. *Seminar Nasional Inovasi Pendidikan Ke-6 (SNIP 2022)*, *6*(1), 10–14.

[12] Amin, M., Ibrahim, M., & Alkusaeri. (2022). Meta Analisis: Keefektifan Stem Terhadap Kemampuan Berpikir Kreatif Siswa. *Journal of Authentic Research on Mathematics Education (JARME)*, *4*(2), 248–262. https://doi.org/10.37058/jarme.v4i2.4844

[13] Febrianti, Y., Djahir, Y., & Fatimah, S. (2016). Analisis Kemampuan Berpikir Kreatif Peserta Didik dengan Memanfaatkan Lingkungan pada Mata Pelajaran Ekonomi di SMA Negeri 6 Palembang. *Jurnal Profit*, *3*(1), 121–127. http://ejournal.unsri.ac.id/index.php/jp/issue/view/591

[14] Rasnawati, A., Rahmawati, W., Akbar, P., & Putra, H. D. (2019). Analisis Kemampuan Berfikir Kreatif Matematis Siswa SMK Pada Materi Sistem Persamaan Linier Dua Variabel (SPLDV) Di Kota Cimahi. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *3*(1), 164–177. https://doi.org/10.31004/cendekia.v3i1.87

[15] Fajriah, N., & Asiskawati, E. (2015). Kemampuan Berpikir Kreatif Siswa dalam Pembelajaran Matematika Menggunakan Pendekatan Pendidikan Matematika Realistik di SMP. *EDU-MAT: Jurnal Pendidikan Matematika*, *3*(2), 157–165. https://doi.org/10.20527/edumat.v3i2.643

[16] Armandita, P., Wijayanto, E., Rofiatus, L., Susanti, A., & Jambi, S. (2018). Analisis Kemampuan Berpikir Kreatif Pembelajaran Fisika Di Kelas Xi Mia 3 Sma Negeri 11 Kota Jambi. *Jurnal Penelitian Ilmu Pendidikan*, *10*(2), 129. https://doi.org/10.21831/jpipfip.v10i2.17906

[17] Nurfitriyanti, M. (2018). Pengaruh Model Pembelajaran SAVI Terhadap Pemahaman Konsep Matematika Melalui Berpikir Kreatif. *Jurnal MathEducation Nusantara*, *1*(2), 1–11. https://jurnal.pascaumnaw.ac.id/index.php/JMN

[18] Suparman, & Husen, D. N. (2015). Peningkatan Kemampuan Berpikir Kreatif Siswa Melalui Penerapan Model Problem Based Learning. *Jurnal Bioedukasi*, *3*(2), 367–372.

[19] Mahmudi, A. (2010). Pengaruh pembelajaran dengan strategi berbasis masalah terhadap kemampuan berpikir kreatif, kemampuan pemecahan masalah, dan disposisi matematis, serta resepsi terhadap Kreativitas (Doctoral dissertation, Universitas Pendidikan Indonesia). Matematika, Sukarta : Universitas Muhammadiyah Surakarta.