



Analysis of Creative and Collaborative Thinking Abilities on Animalia Material in Class X Students of SMA Negeri 1 Airmadidi

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Abstract. *Biology learning demands learning competencies in the realm of high-level understanding, so many students find it challenging to develop their critical thinking skills and, therefore, have difficulty completing various concepts in biology. For this reason, a particular way of learning is needed so that it fosters students' critical thinking skills through creative and collaborative thinking skills so that they can be well-honed in order to be able to solve various complex concepts in biology. Therefore, this research aims to determine the creative and collaborative thinking abilities of class X SMA Negeri 1 Airmadidi students on Animalia material, focusing on their creative and collaborative thinking abilities. This type of qualitative research describes data obtained from a rubric containing research indicators. The research results show that the profile of students' creative and collaborative skills shows good development based on the indicators obtained. Indicators of creative and collaborative thinking abilities are at scores 3 and 4, which shows that students can give excellent and precise answers to both questions through discussions and written tests. Based on these results, the analysis of creative and collaborative thinking abilities in class X12 students at SMA Negeri 1 Airmadidi is in good ability results.*

Keywords: Ability, Creative Thinking, Collaborative Thinking, Animalia

Abstrak. Pembelajaran Biologi menuntut kompetensi belajar pada ranah pemahaman tingkat tinggi sehingga banyak peserta didik yang cenderung sulit menumbuhkan kemampuan berpikir kritis mereka sehingga mengalami kesulitan untuk menyelesaikan berbagai konsep dalam biologi tersebut. Untuk itu diperlukan suatu cara belajar tertentu sehingga menumbuhkan suatu kemampuan berpikir kritis siswa melalui kemampuan berpikir kreatif dan kolaboratif supaya dapat terasah dengan baik agar dapat menyelesaikan berbagai konsep - konsep rumit dalam biologi. Oleh karena itu, penelitian ini bertujuan untuk mengetahui kemampuan berpikir kreatif dan kolaboratif siswa kelas X SMA Negeri 1 Airmadidi Pada Materi Animalia dengan fokus pada kemampuan berpikir kreatif dan kolaboratif mereka. Jenis penelitian ini adalah penelitian kualitatif dengan mendeskripsikan data yang diperoleh dari sebuah rubrik yang berisi indikator penelitian. Hasil penelitian menunjukkan profil keterampilan kreatif dan kolaboratif siswa menunjukkan sebuah perkembangan baik berdasarkan indikator yang diperoleh. Indikator kemampuan berpikir kreatif dan kolaboratif berada pada skor 3 dan 4 yang menunjukkan bahwa para siswa bisa memberikan jawaban yang sangat baik dan jelas baik pada soal - soal yang diberikan dalam bentuk diskusi maupun bentuk tes tertulis. Berdasarkan hasil tersebut dapat disimpulkan bahwa analisis kemampuan berpikir kreatif dan kolaboratif pada siswa kelas X12 di SMA Negeri 1 Airmadidi berada pada hasil kemampuan yang baik.

Kata Kunci : Kemampuan, Berpikir Kreatif, Berpikir Kolaboratif, Animalia

INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students can develop their potential to have religious and spiritual strength, self-control, personality, intelligence, noble morals and skills needed by the environment, nation and state. Education is an effort to gain knowledge formally through school and informally from education in the home and community (Elfachmi, 2016; Ahmad, 2018; Afifah, 2019). The education received by students is formal education, which includes a learning process at school (Anggiasari et al., 2018; Aryana, 2018; Ashiah, 2018). Education is a process of interaction between educators and students that helps to achieve educational goals (Elfachmi, 2016; Daniati, 2018; Cahyani et al., 2019).

Natural science is intended to develop students' knowledge, understanding, and analytical skills regarding the natural environment and its surroundings. Science learning focuses on providing direct experience by utilizing and applying concepts, principles, scientific facts, and scientific findings (Ennis & Wair, 1985; Ennis, 1993; Sudjatmiko & Lili, 2004). Biology is a branch of science that studies the ins and outs of living things, from the molecular and cellular levels to the ecosystem and biosphere levels (Fisher, 2009; Greenstein, 2012; Feldman, 2018).

In terms of terminology, biology comes from two words, namely bios, which means living things and logos, which means science (Jasin, 1984; Campbell, Reece et al., 2011; Hutri, 2016), so that biology can be interpreted as the science that studies living things (Munandar, 2009; Maula, 2014; Marhamah et al., 2017). The study aspect of biology is comprehensive, covering all living creatures on land, water and air (Rahmawati, 2016; Norhasanah, 2018; Naufal, 2019). When viewed in terms of size, all organisms are microscopic, from microorganisms such as viruses and monera to large living creatures such as trees and vertebrates, all of which are included in the biological study aspect (Sudjatmiko, 2004; Sato, 2014; Supriyati et al., 2018).

Education in Indonesia currently uses the 2013 curriculum, which has a paradigm of 21st-century learning. This learning demands change by changing the learning paradigm from (1) teacher-centred towards student-centred learning, independent learning and self-understanding; (2) shift from learning to memorize concepts to learning to discover and build concepts yourself; and (3) changing learning from classical individual learning to cooperative group learning (Treffinger et al., 2003; Utomo, 2011; Maula et al., 2014). The aspects of 21st-century learning involve skills and understanding, creativity, collaboration, and speaking abilities. Some also involve technology, behaviour, critical thinking and communication skills, which provide more challenges in the learning process (Widiningtyas, 2019).

However, even though the 2013 curriculum is implemented, failures are often encountered; this is usually due to a weak communication system teachers must develop in the teaching and learning process. Apart from that, the formation of a higher mindset is shown in all subjects, one of which is Biology, which is accompanied by concepts in the material discussed that are accompanied by a higher mindset. Students consider biology to be a subject that requires them to memorize all aspects of the material in books, giving rise to the feeling that biology is boring.

In studying Biology, many students have difficulty solving Biology questions, especially those related to everyday life problems that require understanding concepts and logical reasoning. Biology is a vehicle for increasing knowledge, attitude skills and environmental responsibility. Biology is related to finding out and understanding nature and living things systematically, so biology lessons are not only limited to mastering the material but also understanding concepts helpful in solving problems.

Biology is discovering knowledge through direct observation, experience and learning. Regarding the biology learning process, teachers often find that students need help understanding biology concepts in depth, even though understanding biology concepts is necessary for integrating nature and technology. This may be due to the lack of student involvement in learning and the teacher's need for more emphasis on the relationship between Biology concepts and the natural environment.

The facts show that students learn to memorize concepts instead of understanding and developing the concepts that are in the students' minds, so students conclude that learning Biology is difficult because there is much material that must be memorized. It is challenging to solve existing Biology problems, and there are too many terms. Scientific so that it is difficult for creativity and collaboration in students.

Birgili (cited in Cahyani et al., 2019) explains that creativity and problem-solving will be used throughout life, so they must be integrated into educational programs implemented in schools. Creative thinking skills are the ability to create ideas, thoughts, or varied works differently from before. According to Noviyana (quoted in Cahyani et al., 2019), creative thinking skills will help find solutions to a problem. Creative thinking is one of the main components of 21st-century learning, which is needed by the young generation in facing the challenges of the 21st century, considering the increasingly rapid development of knowledge and technology today.

Creativity or creative thinking cannot appear by itself but requires practice; for this reason, teachers need to train and hone students' creative thinking abilities by raising problems in everyday life (Meika & Sujana, 2017). Biology subjects are arranged systematically, from primary basic material to complex ones. If students can master basic concepts, it will be easy to take the next lesson (Ashriah et al., 2020). The abstract nature of biology lessons causes difficulties in studying them; for this reason, a particular way of learning is needed so students' creativity can be well honed.

Apart from that, the ability to think creatively and collaboratively is one of the main assets for students studying science, especially biology. Biology is a branch of science that plays a significant role in life, especially in science and technology (science and technology), which is developing rapidly. Biology makes a real contribution to technological development and educates students to have an intellectual and religious attitude in life.

The results of observations at SMA N 1 Airmadidi show that the creativity and collaboration skills that show students' critical thinking patterns are still in the sufficient category, so analysis is needed to improve thinking skills through several indicators so that researchers are interested in conducting research with the title "Analysis of Material Creative and Collaborative Thinking Abilities Animalia in Class X Students of SMA Negeri 1 Airmadidi".

METHOD

This descriptive research reveals the extent of creative and collaborative thinking abilities. This research was carried out in high school. Negeri 1 Airmadid with a sample of class X12 using purposive sampling; therefore, the sample used was class X, which is related to the school syllabus.

Creative and collaborative thinking abilities are measured based on indicators of creativity and collaborative ability. Indicators of creative thinking ability are 1) Fluency, 2) Flexibility, 3) Originality, and 4) Elaboration. Indicators for collaborative thinking ability are 1) Contribute actively, 2) Work productively, 3) Respect others, 4) Show responsibility, and 5) Flexibility.

The measurement results are expressed in tables and diagrams as well as specific criteria; these criteria are in the form of scores and categories: 1) lousy category, 2) fair category, 3) good category and 4) outstanding category.

RESULT AND DISCUSSION

A. Result

The profile of critical and collaborative thinking abilities is the focus of biology learning by taking Animalia (animal) material. The learning model used is collaborative learning by forming and inviting group discussions to manage tasks, along with the role of members of the group contributing actively and productively in discussions to solve problems.

Indicators of concern for this critical thinking ability include fluency, flexibility, originality, and decomposition, as developed by Treffinger (Treffinger et al., 2003). The research results conducted in class at SMA Negeri 1 Airmadidi show that students' critical thinking abilities develop during learning.

Collaborative learning can improve students' thinking abilities. The analysis results based on tasks specifically for groups show that students learn from each other and work together in groups to improve learning outcomes. During collaborative learning, ideas are exchanged between group members, which can increase students' interest in learning and critical thinking skills. Sharing knowledge in collaborative learning allows students to be involved in discussions and take responsibility for their learning success.

Good analytical data was obtained from the research results obtained from interviews and filling out questionnaires from class X12 students. This is proven by the respondents' score for each answer on the questionnaire, which showed a good score, thus showing the students' creative and collaborative thinking abilities. Meanwhile, the results of the short interview he obtained explained that in the learning process, students' analytical skills can be found when students absorb material and also when working on an assignment, especially assignments in the form of questions, which can give rise to students' critical thinking both individually and in groups.

This is seen in students' analytical skills when they absorb the material presented by the teacher so they can understand it and students' concluding skills when the teacher invites students to conclude the material together at the end of the lesson.

The research results show that the student's creativity profile is advanced. These indicators are at scores 3 and 4, showing that students can give excellent and clear answers in the discussion area and complete written tests. Each of these indicators shows descriptive analysis, which is categorized into three parts: high, medium and low. The flexibility and decomposition indicators have a score level higher than 3. In contrast, the fluency and

originality indicators show a score level of 3 or below, showing that the indicators have a different descriptive domain.

The research results show that the profile of students' collaborative skills is suitable. Like the creative indicator, the collaborative skills indicator is also at scores 3 and 4, showing that students can provide excellent and precise answers to the questions. Each indicator shows a descriptive analysis of each group, which shows the score obtained for each indicator, categorized into perfect criteria based on the values obtained.

B. Discussion

This research was carried out at SMA N 1 Airmadidi with a sample of class X12 students. The topic that is the focus of this research is Animalia (Animal) Material. In this research, the collaborative creativity model will form a group to discuss and complete the tasks given. Apart from that, members of each group can contribute actively and productively in discussions to resolve problems.

Based on the results of the analysis of the profile of students' creative and collaborative thinking abilities, they are at a reasonable level. This is in line with several scores for each indicator obtained from the analysis of each answer to the assignment and competency test, which are in the range of value categories ranging from 75 > to 95, indicating good information. And very good. This is in line with their ability to solve several complex concepts in the Animalia material, so the ability to think creatively and collaboratively in solving problems significantly influences their learning outcomes.

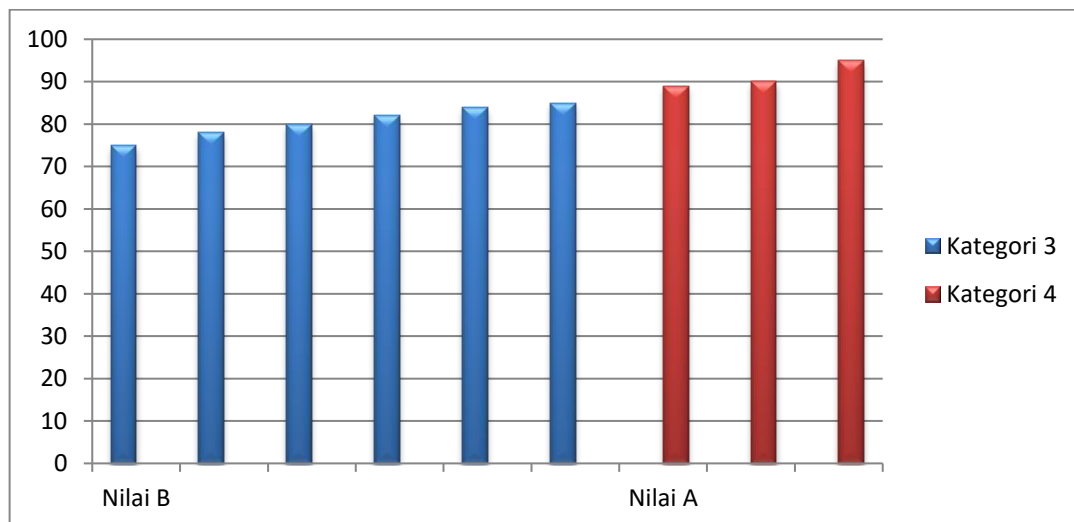


Figure 1. Category value description diagram

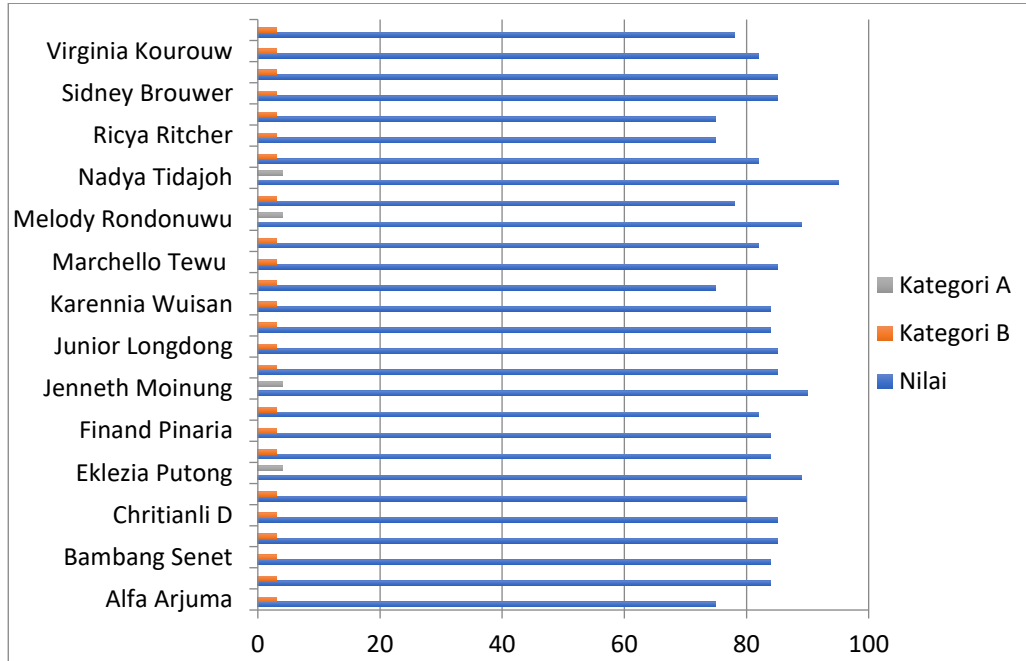


Figure 2. Diagram describing value acquisition

The results of interviews with teachers also strengthen these results. Classical thinking is the capacity to access, analyze, and synthesize knowledge that can be learned, trained, and mastered.

The critical thinking ability profile is the focus of today's Biology learning because it uses a collaborative learning model with stages of presenting problems, inviting group discussions to solve problems, managing tasks and roles of group members for discussions, realizing group responsibilities, creating work and presenting the results of work and make an evaluation of the process and results (Sato in Marhamah et al., 2017). Indicators of concern for this critical thinking ability include providing simple explanations, building basic skills, concluding, and making further explanations, strategies and tactics as developed by Ennis (Rahmawati et al., 2016).

Developing creative and collaborative thinking skills is a concept that must be applied to 21st-century learning. Creative thinking is the ability to think that an individual has and can direct the individual to thoughts full of creativity so that he can create something new and unique work that is different from previous works.

Collaborative learning is when each student meets and dialogues with the subject matter (assignment), and even though they are still unsure, they begin to understand the substance in their way (dialogue with objects). Sharing knowledge in collaborative learning allows students to be involved in discussions and take responsibility for their learning success,

thereby stimulating them to become critical thinkers (Utomo, 2011). In addition, collaborative learning emphasizes students' construction of meaning from social processes. The collaborative learning process presents social events because it contains group dynamics where students with various abilities and experiences work together in small groups to improve the quality of achieving joint results in the learning process.

Collaborative learning emphasizes a learning process that requires dynamic integration of intellectual, social and emotional joint activities by students and teachers. This aligns with what Miells and Littleton stated: Collaborative Creativity (CC) is a scientific process that aims to complete creative tasks through collaboration between individuals, prioritizing student activity in the learning process.

Based on the research results of Sri Astuti, Muhammad Noer, and Endang Susantini, the Collaborative (CC) learning model is valid for use for collaborative and creative skills. In this process, students can build a social environment realized from an idea in Collaborative Creativity (CC) learning. Collaborative groups work together to identify and formulate hypotheses, research, analyze, and formulate answers to tasks or problems they find themselves having to solve together. The basics of creative collaboration are emphasized more on the Collaborative Creativity (CC) Model so students can work collaboratively to master 21st-century skills.

This is based on the assumption that learning is constructive and active, where students must be actively involved in the learning process, and the learning environment is created to encourage and appreciate student initiative (Widiningtyas et al., 2019).

CONCLUSION

Based on the results of the research conducted and obtained from the analysis, the creative and collaborative thinking abilities of class X12 students at SMA Negeri 1 Airmadidi are at a good level of ability. This is in line with their ability to solve a problem concept both in groups and individually so that it has a good influence on the results of their work.

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