

**21st CENTURY SKILLS PROFILE OF STUDENTS IN THE RESEARCH METHODOLOGY COURSE OF THE 2018 BIOLOGY EDUCATION STUDY PROGRAM, MEDAN STATE UNIVERSITY**

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**ABSTRACT**

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This research study aims to determine the 21<sup>st</sup> Century Skills Profile of students in the research methodology course for the 2018 Biology Education Study Program, Faculty of Mathematics and Natural Sciences, State University of Medan. This research was conducted in December-March 2021 in the Biology Education Study Program, Faculty of Mathematics and Natural Sciences, UNIMED. This study used a mixed descriptive method with a sequential explanatory strategy and a sampling technique, namely random sampling of 109 students. The data analysis technique used in this research is descriptive statistical analysis techniques for quantitative data and interactive analysis for qualitative data. Data were collected using a questionnaire and interview instruments. The results showed the 21<sup>st</sup> Century Skills Profile of students in the research methodology course for the 2018 Biology Education Study Program, Faculty of Mathematics and Natural Sciences, State University of Medan was included in the good criteria with a percentage of 77,81%.

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## INTRODUCTION

The 21st century is called the century of knowledge, the century of a knowledge-based economy, the century of information technology, globalization, industrial revolution 4.0, and so on. In this century, there are very rapid and difficult to predict changes in all aspects of life including economics, transportation, technology, communication, information and others. This very rapid change can provide opportunities if it can be exploited well, but it can also be a disaster if it is not anticipated systematically, structured and measurable. One example of this very rapid change is in the field of information technology, especially social media. Recently, social media has been used by irresponsible people to spread hate speech and fake news (hoaxes). Critical thinking is one effort to ward off false information spread on social media (Redhana, 2019).

The National Education Association (n.d) has identified 21st century skills as “The 4Cs” skills. “The 4Cs” include critical thinking, creativity, communication, and collaboration. Critical thinking skills are skills for carrying out various analyses, assessments, evaluations, reconstructions, decision making that lead to rational and logical actions (King, et al., 2010). Thinking activities about subjects, content and problems are carried out through analysis, assessment and reconstruction activities (Papp, et al., 2014). Creativity is the skill of finding new things that have not existed before, being original, developing various new solutions for every problem, involving the ability to produce new, varied and unique ideas (Leen, et al., 2014). Communication skills are the skills to express thoughts, ideas, knowledge or new information, both in writing and orally. Collaboration skills are the skills of working together effectively and showing respect for diverse team members, practicing fluency and willingness to make decisions necessary to achieve shared goals (Greenstein, 2012).

National education in the 21st century aims to realize the nation's ideals, namely a prosperous and happy Indonesian society, with an honorable and equal position with other nations in the global world through the formation of a society consisting

of quality human resources, namely independent individuals, willing and capable to realize the ideals of their nation (Susilowati et al., 2017).

In order to face the challenges of the 21st century, every teacher must have high ability and professionalism. The challenges faced by teachers in the 21st century no longer revolve around students' academic abilities, but rather on students' intellectual, emotional, moral and ethical education. The era of globalization demands high competition without exception for all humans. Professional teachers of the 21st century are not teachers who are just able to teach well. Professional teachers of the 21st century are teachers who are able to become teachers throughout their career to increase the effectiveness of the student learning process in line with environmental developments, can communicate both directly and use technology effectively with parents to support school development.

In this research, the chosen subject is research methodology. This course was chosen because this course is one of the mandatory courses in the Biology Education Study Program, Faculty of Mathematics and Natural Sciences (FMIPA), Medan State University. This course helps students understand several educational research methods that can be used to prepare research proposals and reports. Whether it is research for a student's final assignment (thesis) or for scientific activities such as the Student Creativity Program (PKM) and so on. This course also provides a more meaningful learning experience, this research methodology course is packaged in the form of Student Center Learning with a multidisciplinary collaborative approach. Students will work on six KKNI-oriented assignments, namely routine assignments, CBR, CJR, Idea Engineering, Mini Research, and Projects.

Each assignment is designed to accommodate the study materials needed to realize the learning outcomes needed to realize the specified learning outcomes. This course consists of 3 credits and takes place in 16 meetings. After taking this course, students are expected to be able to describe the philosophy, concepts, principles and research procedures of biology education, be able

to analyze and formulate biology education problems that can be solved scientifically, write references correctly related to educational problems that have been determined from various relevant literature, selecting and using appropriate research designs to solve predetermined educational problems, designing appropriate data collection and analyzing tools and being able to prepare research proposals and reports on research results as the precursor to a thesis (RKPS, 2020).

## METHOD

This research was carried out at FMIPA UNIMED in the Biology Education Study Program. The research implementation started from December-March 2021. The sample used in this research was 109 students using random sampling techniques. This research uses a mixed descriptive method with a sequential explanatory strategy. The instruments in this research were questionnaires and semi-structured interviews. Semi-structured interviews were conducted to confirm student questionnaire answers. The scores resulting from filling out student questionnaires will be analyzed for each question item using the formula according to Sugiyono (2017) as follows:

$$P = \frac{F}{N} \times 100 \%$$

After the percentage of student scores on each question item is obtained, then the scores are interpreted as the level of 21st century skills profile which can be seen in Table 1 as follows.

Table 1. Interpretation of Percentages

| Range                 | Percentage Interval      | Criteria    |
|-----------------------|--------------------------|-------------|
| $61,2 \leq x \leq 72$ | $85\% \leq x \leq 100\%$ | Very Good   |
| $50,4 \leq x < 61,2$  | $70\% \leq x < 85\%$     | Good        |
| $39,6 \leq x < 50,4$  | $55\% \leq x < 70\%$     | Pretty Well |
| $28,8 \leq x < 39,6$  | $40\% \leq x < 55\%$     | Not Good    |
| $18 \leq x \leq 28,8$ | $25\% \leq x \leq 40\%$  | Very Poor   |

## RESULT AND DISCUSSION

The results of descriptive statistical analysis of student questionnaires regarding the "21st century skills profile" are included in the good category with a percentage of "77.81%."

Based on the results of distributing questionnaires for students from the 2018 Biology Education Study Program regarding the level of achievement of respondents in the 21st century skills profile, it was obtained that a percentage of 67% of students stated that the 21st century skills profile was included in the "good" criteria, 17% of students stated that the 21st century skills profile was included into the "very good" criteria, 15% of students stated that the 21st century skills profile was included in the "fairly good" criteria and 1% of students stated that the 21st century skills profile was included in the "not good" criteria.

Based on the results obtained from filling out the questionnaire on the indicator of being able to formulate problems as in the table, it can be seen that in the statement item I can choose the cause of the problem through the KKN assignment in the research methodology course, it is included in the "good" criteria with a percentage of 75.92%. In the statement item I can summarize several study sources that are relevant to finding out research problems with the application of KKN tasks in research methodology courses which are included in the "good" criteria with a percentage of 79.82%. In the statement item I can determine problems using study materials that are relevant to the application of KKN assignments in research methodology courses, it is included in the "good" criteria with a percentage of 76.15%.

The results obtained from filling in the questionnaire on the indicators of being able to analyze/identify problems are as in Table 4.5. It can be seen that in the statement item I linked the latest ideas to resolve the difficulties faced through the application of KKN assignments in the research methodology course, it is included in the "good" criteria with a percentage of 73.85%. In the statement item, I am able to estimate the consequences that will occur if I encounter difficulties through implementing the KKN assignments in the research methodology course, which is included in the "good" criteria with a percentage of 73.62%.

The interview results also show that generally students think critically in the right way. If students are given a problem, they will understand the problem first, where the problem is explained

to state and clarify the problem. Then proceed with developing a problem solving plan, where students must be able to develop a plan to solve the problem, and this ability depends on the individual's experience in solving problems. Followed by implementing the solution plan, students carry out the problem solving plan that has been prepared, students check each step carefully to prove whether the problem solving plan is correct. The final step is to check the results of the solution again, students check the results they did in steps one to three. A suitable solution to the problem given will be obtained by re-examination.

From the results of the questionnaire analysis, it is known that the highest average score in the aspect of critical thinking skills is being able to be open to possibilities with an average of 86.35% (very good). This is supported by (Nandasari & Restuati, 2019) where students are required to work together in groups which of course requires openness of mind that puts aside individual interests. The interview results also show that the average student opens their minds by sharpening their sensitivity in a classroom environment where they accept other people's thoughts by realizing that we have very little knowledge.

## CONCLUSION

The 21st Century Skills Profile of students in the research methodology course of the 2018 biology education study program at Medan State University, based on questionnaire analysis, is in the good category with an average percentage of 77.81%. Where the highest mean is in the collaboration skills subdomain (83.81%) and the lowest mean is in the creative thinking subdomain (72.94%). In detail, the four subdomains of 21st Century Skills, namely critical thinking skills, creative thinking skills, communication skills and collaboration skills, are classified as good criteria.

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