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CORRELATION BETWEEN METACOGNITION ABILITY AND STUDENTS' SCIENCE PROCESS SKILLS ON CELLULAR BIOPROCESS MATERIALS

Maya Cindiati*, Suharsono, Dea Diella

Jurusan Pendidikan Biologi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Siliwangi, Jl. Siliwangi No. 24, Kota Tasikmalaya, 46115, Jawa Barat, Indonesia

*Corresponding author: mayacindiati@gmail.com

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ABSTRACT

Metacognitive skills are required for students to manage and keep track of their understanding of fact-finding and concept-building by scientific process skills. This research aims to determine the correlation between metacognitive skills and students' scientific process skills on cell-based bioprocessing topics. The population of this study were all class of XI MIPA in one of SMA Negeri Kota Tasikmalaya. The research samples were 30 students from class XI MIPA 2 selected based on the purposive sampling method. The research instruments used contained an essay test consisted of 21 questions with indicators developed by Tawil and Liliasari to examine the scientific process skills. In contrast, the questionnaire adapted from the Metacognitive Awareness Inventory consisted of 50 positive statements with 4 Likert-scale-based alternative answers to examine the metacognitive skills. The normality and linearity test are conducted before performing the hypothesis test as a prerequisite. The hypothesis testing based on bivariate correlation and regression with an α of 0.05 showed a positive correlation between the two variables. The correlation coefficient with a value of 0.544 represents a moderate correlation between the two variables. The determination coefficient shows the contribution of 29.6% from the metacognitive skills in students' scientific process skills on cell-based bioprocessing topic.

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INTRODUCTION

In the era of globalization, science and technology will always develop rapidly. In line with that, the problems that arise will become increasingly complex, requiring Indonesia to be more advanced, especially in education, because education is one of the benchmarks for the nation's progress.

Globalization in the field of education, among others, is developing a new educational paradigm that leads to graduates' production under the global learning outcome, where students are required to live independently, be useful, and be globally competitive. Responds to these challenges, students are expected to be able to apply knowledge, be active in developing abilities and potential through awareness in thinking, and overcome daily problems.

In the cognitive realm, learning biology requires the mastery of knowledge, but emphasizes the process of discovery through scientific activities, so that students will find it easier to understand, find their facts so that they can develop and apply the concepts that have been observed. The process of concept discovery requires good science skills. Science process skills are students' skills in applying scientific methods to optimize the process of learning activities.

Quality learning will be realized if students actively construct their knowledge. The role of science process skills is critical because students need these skills to strengthen concepts and find out how knowledge is formed to develop higher knowledge.

Learning by developing science process skills will make learning more meaningful so that students can understand the material and apply the concepts that have been learned in everyday life. Science process skills involve cognitive processes, so that their application requires metacognitive abilities to process and utilize their cognition.

Metacognition ability is an awareness of cognition itself, how cognition works and how to regulate it. This ability is essential for efficiency in cognitive use. Besides, metacognition is a parameter that students must achieve to improve their thinking skills so that it will encourage the ability to solve problems and develop higher thinking skills (Purnamawati, 2013).

Good metacognition skills will support students' formation to be able to choose effective learning strategies, plan, control, and monitor understanding and evaluating thinking processes. Metacognition abilities are needed in order to be able to relate new information to previous knowledge in the process of applying the concepts that have been learned in scientific activities in scientific process skills. Students who have metacognitive abilities will be able to control their weaknesses and correct them, determine appropriate learning strategies according to their abilities, solve problems and understand the extent of success that has been achieved in learning (Azizah et al., 2015).

A good science process skill requires good metacognition skills. By using their metacognitive abilities, students can explore science process skills so that metacognition abilities play an important role in understanding and discovering concepts through their learning experiences. As a result, learning becomes more meaningful because students are actively involved in scientific activities. They can construct knowledge and are allowed to explore themselves optimally.

Metacognition abilities can generate activity and independence and make it possible to develop scientific process skills. Therefore, determining the relationship between metacognition abilities and scientific process skills is to use materials that allow scientific processing skills to be measured, namely bioprocessing material in cells. This material is concrete in nature, but in the process, it cannot be observed because the study includes abstract physiological processes that occur in the human body so that higher-order thinking skills are needed to understand the material.

Based on the observations, it was found that in learning activities, students were rarely involved in designing experiments, making hypotheses, and making experimental questions, causing less channeling of students' ideas. When allowed to ask questions about material that has not been understood or ordered to answer questions about the material that has just been explained, some students cannot ask questions and cannot provide arguments related to answers to the problems given. As a result, students are less trained to develop their thinking skills.

Besides, students are rarely trained to find concepts independently and more often remember the material without understanding basic concepts so that students' science process skills are less developed optimally. Students cannot develop their understanding of certain concepts because the acquisition of knowledge and the process is not integrated, so that it does not allow students to grasp meaning flexibly. Students cannot use their knowledge to explain life-related phenomena to concepts and facts that have been remembered.

Some students have not been able to plan the time used to work on the given task, so sometimes they lack time to complete the task. Some students who are not prepared feel anxious and try to cheat when tests. Students still do not understand or are not sure of their ability to do assignments or tests. Because some students do not have good metacognition skills, they do not have guidance in directing themselves to think and prepare themselves to achieve specific learning goals. The relevant research results were conducted by Siregar & Silitonga (2019), known that the relationship between science process skills and metacognitive skills on learning outcomes obtained a correlation coefficient of 0.809 (very strong category).

These facts indicate that some students do not have adequate science process skills and metacognition abilities. So at this time, it is indispensable to measure the level of science process skills and metacognition abilities as well as the relationship between the two so that teachers and students will be able to apply the right strategy in the learning process. The purpose of this study was to determine the correlation between metacognition abilities and science process skills of students on bioprocessing material in cells in class XI MIPA at SMA Negeri 4 Kota Tasikmalaya in the academic year 2020/2021.

METHOD

This research was conducted at one of the State Senior High Schools of Tasikmalaya City in November-December 2020. This type of research is quantitative research with a correlational method. The study population was all class XI MIPA in one of the Tasikmalaya Public High Schools in the academic year 2020/2021, as many as five classes with a total of 180 students. The research sample from class XI MIPA 2 was taken as many as 30 respondents who were obtained using the purposive sampling technique. In this study, there are independent variables, namely metacognition ability (X), and the dependent variable is science process skills (Y).

Science process skills were measured by a test instrument in the form of a description using indicators developed by Tawil and Liliasari (2014) on bioprocess material in class XI cells, which amounted to 21 valid questions. Meanwhile, metacognition ability was measured using a non-test instrument in the form of a questionnaire adapted from the Metacognitive Awareness Inventory (MAI) developed by Schraw and Dennison (1994). The metacognition ability questionnaire instrument consisted of 50 valid positive statements with a Likert scale answer consisting of four responses indicating levels. Each item's score on the science process skills essay is 0-3, while the score for each statement item in the metacognition ability questionnaire is 1-4 (Likert scale).

Before being used as a data collection tool, the two research instruments were first tested for their feasibility by a validator based on expert judgment, then tested the research instrument, then tested the validity of each item using Anates 4.0 software. At the same time, the reliability test used SPSS software version 26 for windows.

Data processing and analysis techniques in this study include prerequisite tests and hypothesis testing. The prerequisite test includes the Kolmogorov-Smirnov normality test and the linearity test. Then proceed with hypothesis testing using the Pearson Product Moment correlation test and simple regression test. Data analysis in this study was carried out using SPSS version 26 for windows at the 5% significance level.

RESULTS AND DISCUSSION

There are two prerequisite tests for analysis in this study: the One-Sample Kolmogorov-Smirnov normality test and the linearity test. In the prerequisite test, the significance value must be more than 0.05. Based on the normality test on the SPSS, it is known that the probability (p-value) value in the asymptotic significance (2-tailed) column of the data is 0.200> 0.05. Following the basis of decision-making, it can be concluded that the research data is normally distributed.

Furthermore, based on the linearity test, the Deviation from the Linearity Sig value was obtained. is 0.089 > 0.05. Under the basis of decision-making, it can be concluded that there is a significant linear relationship between the two research variables.

The correlation between metacognition and science process skills is known by conducting a hypothesis test, namely the bivariate Pearson product-moment correlation test and simple regression using SPSS 26 for Windows with a significance level of 5%.

Correlation analysis was carried out to produce the degree of closeness of the relationship between variables expressed by the correlation coefficient value. The Sig. (2-tailed) is equal to 0.002 <0.05, which means a significant correlation between the research variables.

The largest score obtained from science process skills in this study was 39, while the smallest score obtained was 11 with an average of 21.6. The largest score obtained from the metacognition ability in this study was 177, while the smallest score obtained was 130 with an average of 154.03.

Based on the value of R (count) (Pearson Correlations), it is known that the magnitude of the correlation coefficient is 0.544 so that R (count) > R (table) is 0.361 meaning, there is a perfect unidirectional correlation between the two research variables. The correlation coefficient value indicates that the strength of the correlation between the two variables is in the medium category. In addition, the value of R (arithmetic) in this analysis is positive. In other words, the increase in metacognition abilities will also increase the science process skills of students.

The regression equation in this study is Ý = a + bx. It is known that the value of a, which is a constant number, is -23.93. Meanwhile, the value of b is the regression coefficient that is 0.325. The simple linear regression equation obtained is Ý = -23.93 + 0.325 * x, the same as the equation shown on the scatterplot graph.

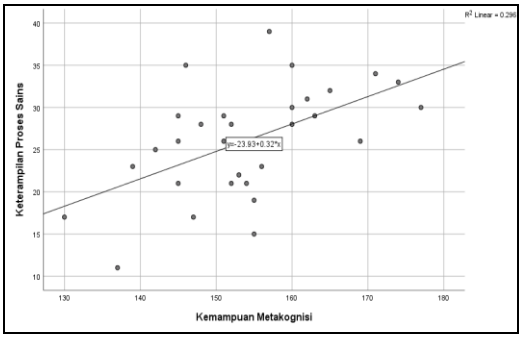

Figure 1. Graph of Scatterplot (Bivar) = X with Y

Regression analysis produces a coefficient of determination to predict the amount of contribution made by the independent variable to the dependent variable. It is known that the value of R2 (determinant coefficient) is 0.296. This value implies that the relative contribution or contribution of metacognition ability (X) to the science process skills (Y) of students is 29.6%. The magnitude of the contribution that metacognition abilities give to science process skills shows that the importance of having metacognitive abilities in students will impact their science process skills.

The correlation between metacognition ability and science process skills is in the medium category because some of the metacognition ability indicators are needed in scientific activities on science process skills. For example, conditional knowledge is needed in applying concepts because by using conditional knowledge, which is knowledge about when and why to use specific learning strategies, students will be able to determine when and why knowledge about bioprocesses in cells that they have learned can be applied to new experiences to explain events that are happening in everyday life. Inline with Schraw and Dennison (1994), "With conditional knowledge, students know the right time for themselves to learn and can deal with uncertain situations in learning."

Furthermore, procedural knowledge and planning skills are needed to design bioprocess experiments in cells that will be carried out. Procedural knowledge is needed to determine how the steps and what are needed in the experiment. In line with Kipnis and Hofstein (2008) opinion, which states that "Designing experiments will train and develop metacognition skills, especially in planning because students are encouraged to think about each procedural stage and the objectives of that stage." Simultaneously, procedural knowledge is used to strengthen planning in preparing problem-solving strategies, namely designing experiments on bioprocesses in cells. As Irham (2018) expressed, "High procedural knowledge skills are the belief of students that they always have a goal for each of the strategies used."

Comprehension monitoring skills are needed in the process of applying concepts because with these skills, students can monitor understanding in the mastery of material or scientific experimental activities so that they can recall previous information that has been learned and then relate it to newly learned information and this is a prerequisite for applying the concept. In line with what was stated by Baker (Wulandari, 2016) that "The monitoring aspect is related to the application of concepts that are used appropriately in the problem-solving process." For example, in working on bioprocess problems in cells, students must recall information about cells' structure and function. In line with Rahmi (2013), "Low monitoring skills can occur because students have not been able to carry out activities or solve problems that require recall of previously learned information."

Information management strategy skills are needed in communication activities because, with these skills, students can manage and process information more efficiently. For example, when finding meaningful information in cells' bioprocessing material, students try to translate the newly acquired information using their language or change it in the form of diagrams and pictures. In line with what was expressed by Alfiah, et al. (2018), "The ability of information management strategies is weak, namely the lack of the ability of students to take pictures, diagrams, and concept maps to help their own undemanding."

In addition, information management strategy skills are needed in classifying activities. Information management strategies are useful in managing learning strategies used to organize knowledge to sort information from the knowledge learned. In the activity of classifying various kinds of bioprocesses in cells, there is a process of sorting out the similarities and differences of each bioprocess that occurs in these cells. In line with Schraw and Dennison (1994), "With an information management strategy, students can sort important information, process the information obtained."

In learning cellular bioprocess, evaluation skills can be applied at the concluding stage because at this stage. Students are required to assess the experimental steps carried out and recap the information that has been obtained from the experiment. In line with what was expressed by Rahmi (2013), "At the conclusion stage, most students have conducted self-evaluation to assess the results of the analysis or investigation as expected, evaluate the accuracy of the procedures used, and evaluate the results of the conclusions whether they have been used. Under the purpose of the investigation ".

Many factors influence the difference in the level of metacognition abilities possessed by each student, and this will also influence the differences in science process skills possessed by students. Because based on the linearity test, it was found that there was a significant linear relationship between the variable metacognition ability (X) and science process skills (Y).

Better metacognition abilities will ensure the knowledge gained can last longer in memory so that it will have an impact on increasing science processing skills. This is because students who have metacognitive abilities can develop all their skills, such as science process skills. In addition, metacognition abilities can improve the learning process for the better because biology learning is not just a product but also a process. In line with what was expressed by Pintrich (Kodri & Anisah, 2020), "The more students know about the thought process, the better the learning process and learning achievement they will achieve."

Various previous studies have shown a correlation between metacognition abilities and students' science process skills. Metacognition skills play an essential role in supporting learning success. Students who have good metacognition abilities will have a high level of awareness of the learning activities. As stated by Utama, et al. (2019), "Students who have high metacognition abilities will be faster and better at processing and utilizing their cognition so that they can contribute to improving their science process skills."

Low metacognition ability will affect science process skills below because science process skills require a process of linking newly learned information with previous information in memory on concept application activities. In line with the Utama, et al. (2019), "Students who have low metacognition skills which tend to be passive will prefer to follow regular and clear learning steps because generally only accept material tends to be what it is, not by connecting the initial concept and alternative, more scientific concepts."

The importance of metacognition abilities for science process skills, so the differences in metacognition abilities in students may affect science process skills. For example, in applying the concept, some students who have good metacognition abilities will be able to evaluate which information must be known and the extent to which the understanding of that information is to connect knowledge between the initial material and what is being studied. In line with that, van Opstal & Daubenmire, (2017) suggest that "Science process skills require the existence of prior knowledge or prior knowledge so that a metacognitive ability is needed to evaluate what is already known and what is still needed to be known."

In addition, metacognition skills encourage students to construct their knowledge and have the opportunity to explore themselves optimally so that their scientific process skills can develop optimally. In line with what was stated by Utama, et al. (2019), "Students who have high metacognition abilities can explore their science process skills." With metacognition abilities, learning becomes more meaningful because students are involved in scientific activities that involve integrating prior knowledge with newly learned knowledge, so that science process skills develop optimally.

In general, learning growth is supported by internal and external factors. Metacognition ability is one of the internal factors in learning that can affect students' science process skills. In line with that, van Opstal & Daubenmire, (2017) suggest that "When combined with other elements of the science skills process, metacognitive abilities help lead to a fully functional process to assist learners in their learning".

Metacognition ability is one of the essential factors that can support scientific activities to develop participants' scientific skills. In line with what van Opstal & Daubenmire, (2017) stated, "Metacognition is an important element of science skills in general. Sound scientific investigation cannot be carried out without using and knowledge of metacognitive skills".

Therefore, the process of science skills is an important skill to emerge in science learning as suggested by Karamustafaoğlu (2011) that "Science process skills can make students actively participate in creating long-term learning, forming correct habits as a scientist in solving problems. Moreover, planning experiments and students learn how to apply science".

Science process skills are an important tool in generating and using the information to carry out scientific experiments to solve problems. So, the role of metacognition abilities is needed, one of which can generate activeness and independence to allow students to develop science process skills by building and finding their knowledge. In line with that, Joyce (2011) revealed that "In metacognitive, there is a process of" letting the student into the secret "so that students can build their knowledge and abilities, decide which learning strategies to use, solve problems, and discover their knowledge. which will be studied".

Thus, in order to have good science process skills, good metacognition skills are also needed. In line with Wahyudienie's (2018) opinion, "Metacognition can be used as an excellent intermediary to improve students' science process skills. If students' metacognition ability is high, it will significantly impact students' science process skills.

Based on the above thinking, optimal science process skills will be obtained if the ability to control these students' cognitive processes has been developed well. This ability refers to metacognition abilities. The ability of metacognition plays an important role in regulating and controlling cognitive processes so that learning and thinking become more effective and efficient.

Science Process Skills in Cellular Bioprocess Materials

The achievement of students' science process skills can be seen from the different score percentages for each indicator along with their categories. For more details, it can be seen in the following image:

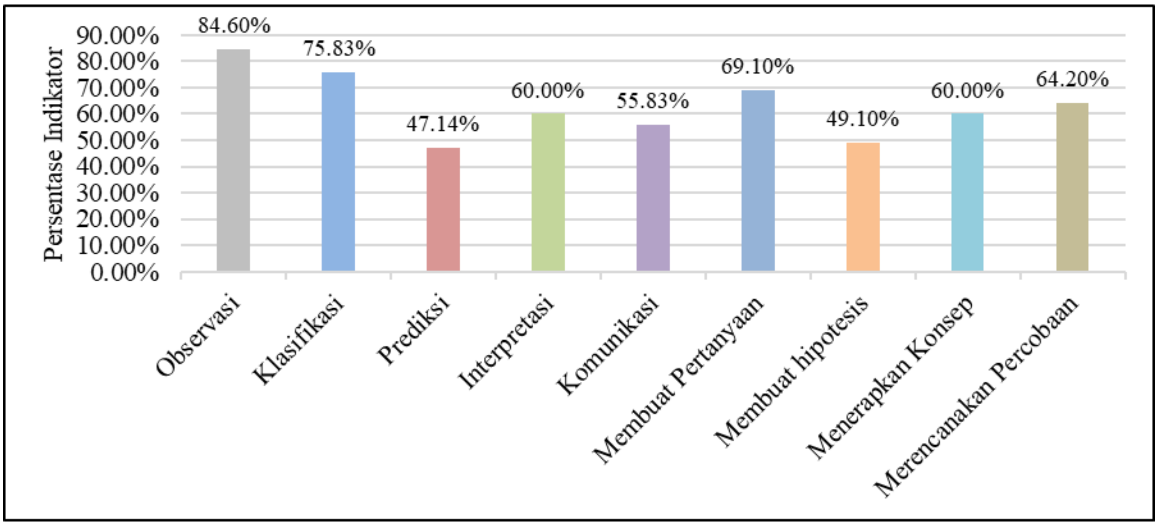

Figure 2. Graph of the percentage score for each indicator of science process skills

The first indicator is observing with a score percentage of 86.40% and is included in the very good category. The high percentage of observation indicators in science process skills is due to observing, especially in diffusion and osmosis experiments on bioprocessing material in cells that are very easy to do. Besides, students are very skilled in observing diffusion and osmosis events because they are used to finding them in everyday life, and these skills are the most fundamental skills to have. As stated by Toharudin (2011), "The ability to observe is the most basic skill in acquiring a knowledge, so that in every lesson with any model or method aspects of observing skills are still applied."

The second indicator is classifying with a score percentage of 75.83%, and it is included in the excellent category. Some students have difficulty classifying the types of membrane transport because they do not understand the bioprocess material in cells, and the answers given do not refer to theory, so the answers are not correct. Consistent with research conducted by Hayat et al. (2011), which states that "Students are less able to connect the results of observations with theory to be one of the obstacles in learning."

The third indicator predicts a score percentage of 47.14% and is included in the good category. The low percentage of predictive indicators on science processing skills on bioprocessing material in cells is supported by students who are not used to being active in expressing opinions, so they tend to hesitate and do not have confidence in making predictions of bioprocessing events in cells they encounter. Most of the students are less skilled in making predictions, and the answers are not following what has been investigated. In learning, students are rarely involved in doing practicum, so that students do not have experience or are not trained to make predictions during practicum. In line with that, Salosso, et al. (2018) explained that "Students are able to predict well because students have gained an understanding of the concept from practicum and the work done on the problems that have been done."

The fourth indicator is interpreting, with a score percentage of 60.0%, and it is included in the good category. Some students are less able to conclude experimental results because practicum activities are rarely carried out. These activities allow students to gain direct learning experience, and the knowledge gained can be remembered so that students can make conclusions from the events that have been learned.

In addition, students do not understand how to write appropriate conclusions. So, by understanding the purpose of the experiment, students will be able to provide conclusions. In line with Wulandari (2012), "The mistakes written by students in making conclusions are the conclusions that are not under the experiment's objectives, and the conclusions written there are still misconceptions, and students do not understand in making conclusions."

The fifth indicator communicates with a score percentage of 55.83% and is included in the sufficient category. Indicator communicating is included in the sufficient category because students are less skilled in conveying observational data in writing in tables or graphs on experiments based on facts and concepts contained in bioprocess questions in cells. In addition, students do not know how to change the information in questions into tables or graphs. In line with the opinion of Devi (2010), "Skills to convey opinions on the results of other process skills both orally and in writing in the form of summaries, tables, pictures, posters, and other appropriate output."

The sixth indicator asks questions with a score percentage of 69.10% and is included in the good category. The skills to ask questions or formulate problems are in a low category because these skills are rarely trained in practicum activities so that students do not understand how to make suitable and correct problem formulations. In addition, the problems presented in practicum activities can stimulate students to ask questions so that they can train to make scientific questions that lead to experimental activities to be carried out. In accordance with the opinion of Liandari (2017), "The ability to formulate problems can increase from 73% to 98% through practicum-based activities".

The seventh indicator proposes a hypothesis with a score percentage of 49.10% and is included in the fair category. Students are less skilled in conveying assumptions that are answers to a problem formulation before it is proven. Students have not been able to formulate problems, so that making hypotheses will also be difficult for students because the formulation of problems and hypotheses is interrelated. In addition, when asked to write a hypothesis, students do not understand what is meant by a hypothesis, how to determine a hypothesis that is relevant to the problem. Experimental activities characterize the learning process that does not facilitate participant learning. In line with that, Liandari (2017) also explained that "The ability to formulate hypotheses increased from 72% to 81% through practicum-based activities".

The eighth indicator applies the concept with a score percentage of 60.0% and is included in the sufficient category. Students have difficulty composing appropriate words to relate their initial knowledge of cells to bioprocessing events in cells or new situations, and some others do not understand the material. This condition is because learning has not trained science process skills. According to Uzer Usman (Kurniawati, 2015), "Skills to apply concepts are skills to use learning outcomes in the form of information, conclusions, concepts, laws, theories, and skills in new situations."

The ninth indicator is planning the experiment with a score percentage of 64.20%, and it is in a good category. Experiment planning skills are in a good category because students can make work steps systematically and prepare experimental tools and materials. The practicum in learning is not only an experiment that the teacher has designed to improve it further. Students also have to design their experiments. So those students are given the freedom to determine the practicum to be carried out, make the necessary work steps, prepare tools and materials independently.

Some students have science process skills in the low category, and this is because, in learning activities, students are not facilitated and trained to develop science process skills through scientific activities. Besides, the practicum carried out is only guided by the teacher's instructions, so that students are rarely involved in designing practicum activities. Students are not accustomed to working on science process skills questions because the teacher never uses questions to measure science process skills, so that many students experience confusion to work on the types of questions given. In line with that, low science process skills are caused by several factors, including low scientific background, lack of laboratory infrastructure, the only guidebook in learning, the school administration has not initiated contextual learning, only emphasizes mastery of concepts, as well as learning activities that have not explored science process skills (Sukarno et al., 2013).

Learning should prioritize the process, where students are allowed to build their understanding of concepts and find ways of obtaining their knowledge so that the concepts obtained are concrete. Students can develop their knowledge by applying science process skills to bring up a deep understanding of concepts. In line with what was expressed by Nworgu & Otum (2013), "Science process skills are essential because they are a provision to use scientific methods in developing science and are expected to acquire new knowledge and develop the knowledge they have." So, students not only learn existing knowledge but also learn how to acquire this knowledge.

Here, who plays a vital role in improving students' science process skills is the teacher concerned. Teachers must better understand aspects of science process skills that still have to be improved or even raised in learning and must condition a learning environment that can facilitate students in finding facts and building concepts through scientific investigation so that science process skills can develop optimally.

Students' Metacognition Ability

The achievement of students' metacognition abilities can be seen from the different score percentages for each indicator and their categories. For more details, it can be seen in the following image:

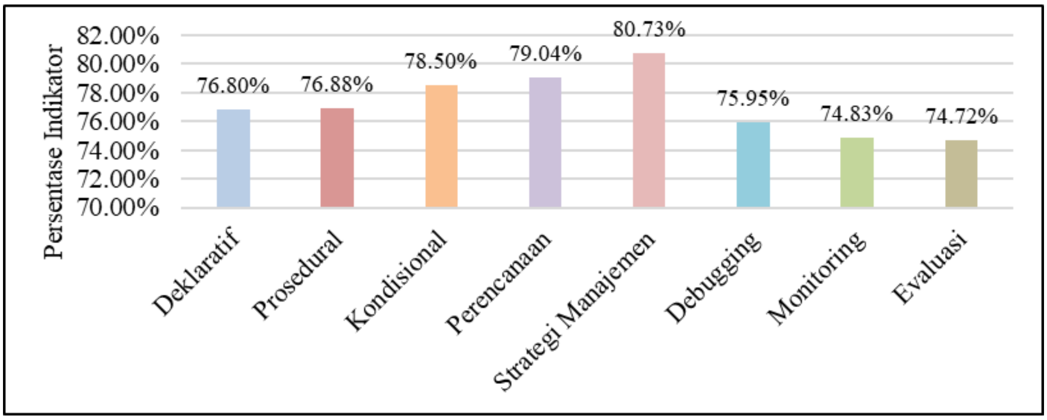

Figure 3. Graph of the percentage score for metacognition ability

The first indicator is declarative knowledge with a score percentage of 76.80% and is included in the good category. This result shows that students have sufficient knowledge about themselves as learners, namely determining what learning strategies are effectively used in studying cellular bioprocess material, what information must be mastered, what learning resources are needed, and understanding what factors influence understanding. In line with the opinion of Sihaloho, et al. (2018), "High declarative knowledge skills are aware of why teachers expect them to learn and understand students' intellectual strengths and weaknesses."

The second indicator is procedural knowledge with a score of 76.88% and is included in the good category. This result is because students can independently determine the objectives and steps of bioprocess experiments in cells. Students have adequate procedural skills so that students can know how to use appropriate learning strategies in studying bioprocess material in cells and use different strategies to understand the material more effectively. In line with the opinion of Irham (2018), "High procedural knowledge skills are the belief that he always has a goal for each of the strategies used."

The third indicator is conditional knowledge with a score of 78.50% and is included in the good category. Conditional knowledge is in either category. This result shows that students have high abilities to know why and when the time is right for them to learn and deal with uncertain situations in learning. In line with what was expressed by Kodri & Anisah (2020), "The high level of conditional knowledge is the awareness of students to learn maximally when they want to know the topic and motivate themselves to learn when needed".

The fourth indicator is planning with a score percentage of 79.04% and is included in the good category. Planning skills are in a good category because students can choose the right learning strategy and organize all the components that affect the learning process, such as the time needed to understand the bioprocessing material in cells, make various steps in learning, determine learning objectives, make preparations before working assignments or reading and looking for information related to the material. In line with what is expressed by Ramadhan (2018), "High planning ability is indicated by the awareness of students reading instructions carefully before starting assignments."

The fifth indicator is the information management strategy with a score of 80.73% and is included in the good category. The high percentage of information management strategies is because students are often trained to answer questions using their own words, based on their understanding to have good skills in managing information. Those skills, such as organizing concepts, can summarize or sort out which information is essential and then discuss information obtained in its own words and decipher it. In line with the opinion of Zohar and Dori (2012) that "Metacognitive abilities can be in the form of metacognitive experiences related to the cognitive efforts of students."

The sixth indicator is debugging with a score percentage of 75.95% and is included in the good category. Improvement skills are in a good category because students can make decisions when they have not understood the material being studied, such as asking other people and repeating the material. This shows that students have high abilities to express strategies used to improve their understanding of cellular bioprocess, correct and replace ineffective strategies, correct strategies, and prevent wrong actions in understanding cellular bioprocess. In line with what Amir (2018) stated, "High improvement skills are students 'awareness to ask for help from others when needed and students' awareness to stop and read again when they are confused."

The seventh indicator is monitoring with a score of 74.83% and is included in the good category. Monitoring skills are in a good category because students can understand the abilities they have in mastering the material, make alternative answers in working on questions, and analyze the learning steps that have been used. This shows that students have sufficient ability to conduct self-assessments or assess the strategies they use. In line with what Abdullah & Soemantri (2018) expressed, "High supervisory ability is the ability of students to consider several alternative solutions before answering and students' awareness to stop regularly to check to understand".

The eighth indicator is an evaluation with a score percentage of 74.72% and is included in the good category. The evaluation percentage is the lowest indicator of metacognition ability because students do not double-check their understanding of the material studied. By checking back, students can realize their mistakes and help students solve the problems appropriately. Besides, students tend not to correct mistakes they do themselves in the learning process because students have not realized their strengths and weaknesses.

This analysis is in line with what was expressed by Efrilla, et al. (2018), "High evaluation skills are the awareness of students to ask themselves about how well they have achieved their goals (after the assignment is complete)."

The metacognition abilities of students who are not high can be caused by several things, namely because the metacognition abilities of students have not been adequately empowered in learning. According to Corebima (2009), "Empowerment of thinking and metacognition skills needs to be done so that students become independent learners. Lack of metacognitive Empowerment will have an impact on low cognitive abilities ". In addition, this is because students have not been trained to know their cognitive abilities and are less able to manage and monitor their cognitive abilities. Also, Diella & Ardiansyah (2017) argues that "Low metacognition skills are due to low declarative knowledge, where ideal declarative knowledge is basic knowledge that students must have because this knowledge is related to facts".

The diversity of metacognition abilities is influenced by the experiences of students who are very diverse and affect their ability to solve problems and their learning strategies. The diversity of students' metacognition abilities is due to this ability requiring a process because everyone is different in realizing and regulating their metacognitive abilities. As stated by Alkadrie, et al. (2015), "The factors that influence metacognition ability for each score are relatively the same, namely internal factors (student memory factors in the lessons they master, applied learning strategy factors) and external factors (learning facilities availability factor. At home, the opportunity factor in expressing ideas/thoughts from parents to children, the factor of parent's attention at children's learning hours, and the factor of participation in school organizations)".

On the other hand, students' metacognition abilities are not high, resulting in this ability to be trained because, with this ability, students can increase their chances of gaining good science process skills. The solution is to improve the learning process by implementing effective learning through metacognitive strategies. Students without metacognitive strategies will never become independent learners because they do not know how to organize, regulate and evaluate their learning activities.

CONCLUSION

Based on the results of research and data analysis testing, it can be concluded that there is a significant correlation between metacognition abilities and students' science process skills on bioprocessing material in cells in class XI MIPA at SMA Negeri 4 Kota Tasikmalaya. The correlation coefficient value shows that the two variables' correlation is positive and is in the medium category. Meanwhile, the coefficient of determination showed that the variable metacognition ability contributed 29.6% to students' science process skills.

Based on the categorization of science process skills, the highest score for the indicator is observing indicators, while the lowest is predicting indicators. The highest indicator score was the information management strategy indicator in the metacognition ability categorization, while the lowest was the evaluation indicator. It is currently necessary to conduct further and in-depth research regarding metacognition abilities and consider other factors that affect students' science process skills.

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