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Life-Long Learning Profile of Junior High School Students in Science Learning

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Abstract: Implementing life-long learning is vital to help students face rapid global development. Life-long learning is a principle in organizing education and a primary need for everyone to adapt to changing times. This study aims to analyze the application level of lifelong learning among SMP Negeri 1 Pucakwangi students, especially class VII students. This study used a descriptive qualitative approach with a sample of 28 students. Data were collected through a questionnaire containing five life-long learning indicators: complex thinking, information processing, effective communication, collaboration/cooperation, and habits of mind. The results showed that overall, the level of life-long learning application of students at SMP Negeri 1 Pucakwangi was still in the poor category, with an average score of 2.8 out of a 4.0 scale. Students obtained a high score (3.0) in the complex thinking indicator. In contrast, in other indicators, such as information processing (2.7), effective communication (2.6), collaboration/cooperation (2.8), and habits of mind (3.1), the scores obtained were still relatively low. The three indicators that obtained low scores, namely information processing, effective communication, and collaboration/cooperation, indicate that students still need further development in these skills. Based on the study results, it can be concluded that although some indicators show good results, there are also indicators that need to be improved to optimize the implementation of lifelong learning. Therefore, there is a need for further efforts in improving students' skills, especially in terms of information processing, effective communication, and collaboration, so that they can be better prepared to face the growing global challenges.

Keywords: Life-long Learning; Profile; Science Learning.

Introduction

Education in Indonesia has not fully achieved the success of students, which makes it difficult for students to be absorbed in the world of work. Rapid global development requires every citizen to have the ability to answer the demands of the development of the times [1].Very rapid global developments, especially in the advancement of natural science that is integrated with technology that produces very useful innovations, have a positive impact on everyday life [2]–[4]. Natural science plays a very important role in facing rapid global development because natural science will equip students with critical thinking skills, problem-solving abilities, and an understanding of natural phenomena [3], [5], [6]. Life-long learning must be applied and supplied to students to face rapid global development. The application of lifelong learning to learning is the main organizing principle for all forms of education and learning and an absolute primary need for every individual. Life-long learning is very important and needed by society to improve the welfare of life.

Life-long learning is very important to be applied in learning, especially in science learning; in applying life-long learning, one must pay attention to the five standards of lifelong learning. According to [7] The five standards of lifelong learning include the first standard, Complex Thinking Standards, with indicators of comparing, classifying, analyzing errors, induction, and decision making, the Information Processing Standards have indicators of students being able to effectively interpret and synthesize information, effectively use various information gathering techniques and sources, access information accurately, The third Effective Communication Standards has indicators that first express ideas clearly, effectively communicate with diverse audiences, communicate effectively in a variety of ways, the fourth Collaboration/Cooperation Standards with indicators showing the ability to work for a common goal, effective in demonstrating interpretation skills, effective in performing various roles, and the last Habits Of Minds with indicators of self-regulation, critical thinking, and creative thinking. Research that examines life-long learning has been carried out by many previous researchers, who examined life-long education policies, life-long education strategies and practices in life-long learning that have been implemented in various countries, not only in Indonesia. Of the several previous studies conducted, no research examines the development of lifelong learning in the learning process of Natural Science. Therefore, the author plans to analyze lifelong learning in Natural Science learning. However, before conducting further research, preliminary research must be carried out to determine the profile of students' lifelong learning in Science learning.

Research Methods

The mini-research conducted is preliminary research to determine students' life-long learning skills in science learning at SMP Negeri 1 Pucakwangi. Descriptive research

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aims to reveal or explain phenomena found during research [8]. This mini-research has a subject of 28 7th-grade students in science learning. The technique used in the mini research in collecting data is a questionnaire developed based on students' life-long learning standards consisting of Complex Thinking, Information Processing, Effective Communication, Collaboration/Cooperation, and Habits of Mind standards [7]. The questionnaire used to collect data contains 12 questions representing the five life-long learning standards. The questionnaire is made on a scale of 1 to 4, with a maximum score of 4.00. The questionnaire has random positive and negative statements, which will make students answer honestly. The data that has been obtained is analyzed descriptively. The data presentation has two main focuses, namely the average score of each life-long learning standard in science learning, and the second is the average score of the statement of each life-long learning standard.

Results and Discussion

The data collection results regarding mini research on analyzing life-long learning of SMP Negeri 1 Pucakwangi students in science learning using questionnaires to interpret data are divided into two main parts. The data division is based on an overview of students' lifelong learning in general and students' life-long learning from each standard.

Overview of students' life-long learning in science learning as a whole

Students' life-long learning profiles generally show an overall average value with the average of each standard. This can be illustrated in Figure 1 below.

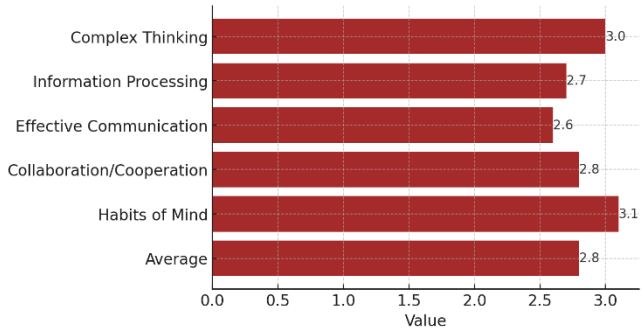

Figure 1. Average total Life-long learning of students

Based on the figure above, the average score of life-long learning of SMP Negeri 1 Pucakwangi students in science learning reaches 2.8 from the maximum score of 4.0, which means that the overall life-long learning of students is still low. Therefore, there is a need for improvement in the learning process. In each of the student life-long learning standards shown in the figure above, there are two life-long learning standards with the lowest average score, namely the Effective communication standards, which have an average score of 2.6; Information Processing Standards, which have an average score of 2.7 and Collaboration/cooperation has an average of 2.8. The data shows that students do not have good skills in communicating information and do not have good skills in processing information and concepts learned. Students cannot be active in collaboration.

Specific description of students' life-long learning in each standard

This section will discuss the specific description of students' life-long learning in each standard.

Complex Thinking Standards

Complex Thinking Standards have three statements in the questionnaire that represent three aspects: 1) effectively use various complex reasoning strategies to classify, 2) effectively use various reasoning strategies to analyze problems or errors, and 3) effectively use various complex reasoning strategies in comparing. The data obtained is illustrated in the bar chart in Figure 2 below.

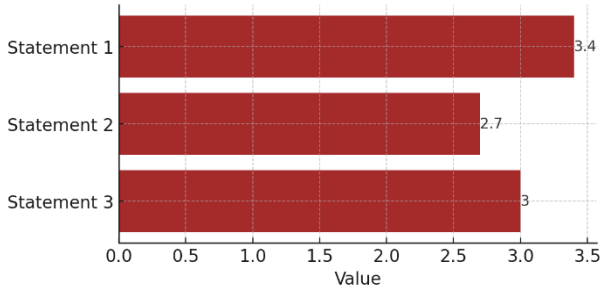

Figure 2. Value of each aspect of Complex Thinking Standards

The figure above regarding the value of aspects on the Complex Thinking Standards in two statements has a fairly high average, namely in statements 1 and 2, so that the data shows students aspects of effectively using various complex reasoning strategies to classify and effectively use various reasoning strategies to analyze problems or errors However, statement 3 has an average value of 2.7 from a maximum scale of 4.0 so that it is included in the low category, it shows that students in using complex reasoning strategies in comparing are still low or not effective, this is shown when conducting discussions in solving problems. Complex thinking must be applied in the learning process and integrated into life-long learning.

Information Processing Standards

The Information Processing Standards has two statements in the questionnaire, representing two aspects of the information processing standards: 1) effective in using various information gathering techniques and sources and 2) Effective in interpreting and synthesizing information. The data obtained is illustrated in Figure 3 below.

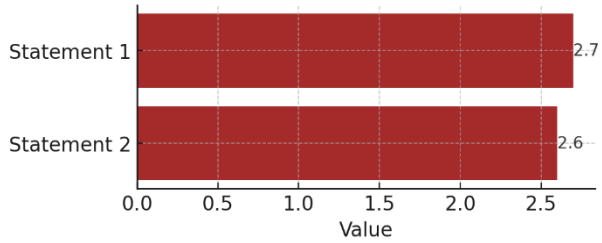

Figure 3. Value of each aspect of Information Processing

Standards From the picture above regarding the value of aspects of the Information Processing standards, there are two statements with a low average value: statement 1 has an

average value of 2.7, and statement 2 has an average value of 2.6. With this data, students still have difficulty understanding learning concepts such as analyzing or interpreting graphs, diagrams, charts and tables; besides that, students are also still very weak in assessing information accurately, so students have difficulty in concluding or choosing the essence of a reading source.

Effective Communication Standards

Effective Communication Standards or effective communication has two statements in a questionnaire that represent two aspects of effective communication standards, namely: 1) express ideas clearly and 2) be effective in communicating with diverse audiences. The data obtained is illustrated in the bar chart Figure 4 below.

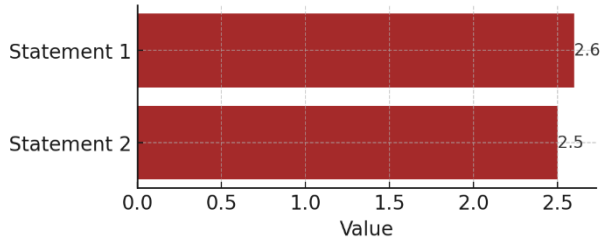

Figure 4. Effective Communication Standards

In Effective Communication Standards, two statements represent two aspects with low average scores, namely, statement one has a score of 2.6 and Statement two has a score of 2.5. The low average score is caused by students who are less skilled in communicating in various ways; besides that, students also express opinions that are ineffective in communicating with the audience, so they cannot convey ideas or opinions.

Collaboration/Cooperation Standards

The Collaboration/Cooperation standards or collaboration/cooperation standards have two statements in the questionnaire that represent two aspects of the collaboration/cooperation standards: 1) Demonstrate the ability to work for a common goal and 2) Effective in showing interpretation skills. The data obtained is illustrated in the bar chart Figure 5 below.

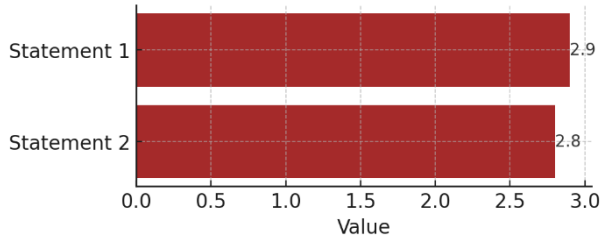

Figure 5. Collaboration/Cooperation Standards

Based on the figure above, the average value of the statement aspects on student collaboration skills in learning is still low because it gets an average value on statement one of 2.9 from a maximum scale of 4.0 and an average value on statement two of 2.8 from a maximum scale of 4.0. The data shows that students tend to work only depending on their respective tasks, so they have not thought broadly about working in collaborative learning; students also lack interpretation skills when working in teams.

Habits of Minds/Freedom of Mind

In the Habits Of Minds standard or freedom of thought, three statements in the questionnaire represent three aspects of the Habits Of Minds standard or Freedom of Thought, namely: 1) Self Regulation, Sensitive to feedback received 2) Critical Thinking or clear and able to seek clarity 3) Creative Thinking or being able to think optimally to be able to cross the limits of one's ability. The data obtained is illustrated in the bar chart Figure 6 below.

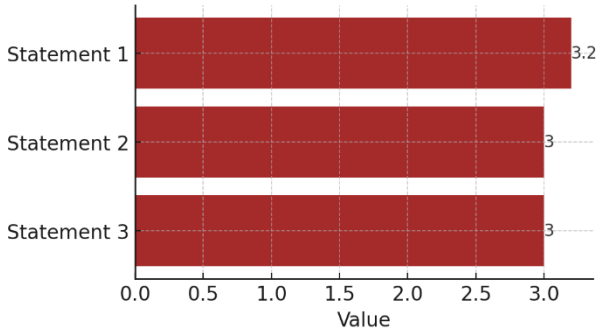

Figure 6. Habits Of Minds

The picture above shows that the average aspect of Habits Of Minds is classified as good because the aspect of habits of mind has an average value of at least 3.0 from a maximum scale of 4.0, which in statement one has an average of 3.2 from a maximum scale of 4.0, in statement two has an average of 3.0 from a maximum scale of 4.0. Statement three has an average of 3.0 from a maximum scale of 4.0. Therefore, students have good skills in creative thinking, critical thinking, and self-regulation in learning.

After conducting a mini-research, the results show that students' lifelong learning at SMP Negeri 1 Pucakwangi is still in the low category because it averages 2.8 on a 4.0 scale. Low life-long learning is found in three life-long learning standards: the first is information processing, the second is effective communication, and the third is collaboration/cooperation. The low level of the three lifelong learning standards is certainly caused by students not having good communication skills and processing information and concepts learned, so students cannot be active in collaborating and communicating effectively. This causes students to have difficulty understanding learning concepts such as analyzing or interpreting graphs, diagrams, charts and tables.

The low standard of information processing in science learning shows that students are less motivated to learn, so students pay less attention during the learning process. The low information processing experienced by students is caused by internal factors, namely low student interest in learning student concentration besides that, external factors are also influenced by family and learning environment and friendship environment [9]–[11] In addition to low interest in learning, there are often misconceptions between students and teachers, books, in understanding the material, so that it can hinder students in processing information. Some factors that contribute to low information processing by students in science education include misconceptions held by students, teachers, and learning materials, as well as inappropriate textbooks and

school infrastructure [12]–[14]. Students who experience low information processing can have difficulty understanding learning, such as graphs, tables, images, and concepts from the learning; besides that, students cannot process information accurately and thoroughly.

Weak information processing will affect students' communication skills; low effective student communication in learning is caused by a lack of active or student involvement in learning; it is influenced by students' lack of confidence in expressing or communicating their opinions. Influencing factors include lack of communication intensity in learning, self-confidence, support, empathy, and positive attitudes from parents, as well as students' lack of openness to teachers [15]–[17] Students who are weak in processing information and communicating will affect collaboration skills. Low student collaboration skills are caused by students who are less active in learning. When working as a team, students are less communicative in collaboration, which will make students weak in collaboration skills. Factors or causes of low student collaboration skills are because students are less involved or less active during presentations, less discussing during teamwork or in groups, lack of communication between friends, lack of student confidence in working together in teams [18]–[20].

Low or poor life-long learning students need a special program that is influential in equipping life-long learning skills, which are indicators of learning for students in the learning process. Creating a program specifically designed to equip students with life-long learning must be in accordance with the standards of life-long learning. Life-long learning has five standards: complex thinking, information processing, effective communication, collaboration, and habits of mind. Equipping students with lifelong learning is very important to face the times in science, technology, and the world of work [21]–[23]. Especially in science learning, it needs to be integrated into learning based on life-long learning for the advancement of technology that supports science learning to bring innovations that are very useful and positively impact life today and life in the future.

Internal and external factors can influence the application of life-long learning [24]–[26] Internal factors that influence students' life-long learning are factors that come from the students themselves in motivating them to learn, while external factors that influence students' life-long learning come from school institutions, such as facilities and infrastructure provided to support the learning process [27] . Students are very important to have life-long learning skills, with life-long learning skills possessed by students, students will be ready and able to face the era of globalization 4.0, so further action is needed to improve students' life-long learning at SMP Negeri 1 Pucakwangi in Science Learning.

Conclusion

Based on the data, it can be concluded that students' lifelong learning skills at SMP Negeri 1 Pucakwangi are still in the low category, especially in the standards of information processing, effective communication, and collaboration/cooperation. The teacher, as a facilitator in the learning process, must improve and equip students with life-long learning; life-long learning is needed in facing the rapid development of the times. In life-long learning, students will be more skilled in solving problems related to critical thinking skills, creativity, processing information, and communicating to solve problems. Students who have a soul or already have provisions in life-long learning will be better prepared to face the times and plunge into the world of work because students are accustomed to working in teams and individually.

Author's Contribution

Citra Khoerun Nikmah: the main author and person responsible for data collection. M. Syaipul Hidayat and Siti Patonah: Supervisors who played a significant role in directing this research.

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