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Science Learning Patterns for Primary School/ Madrasah Ibtidaiyah: The Use of Circulatory Bottle Props on the Circulatory System

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Abstrak

Salah satu permasalahan yang sering muncul dalam pembelajaran adalah sulitnya guru Madrasah Ibtidaiyah dalam menyampaikan konsep-konsep IPA melalui fenomena kehidupan sehari-hari. Tujuan dari penelitian ini untuk mengetahui pola pembelajaran dengan menggunakan alat peraga *circulatory bottle* sebagai peningkatan hasil belajar siswa. Metode Penelitian ini menggunakan deskriptif kualitatif dan teknik analisis merujuk pada konsep Miles & Hubberman dengan subjek penelitian melibatkan guru kelas, kepala madrasah, dan peserta didik kelas V (lima) MI Nurul Hasanah Sukaharja yang berjumlah 23 siswa. Hasil Penelitian ini menunjukkan bahwa Pertama, Pola pembelajaran dengan menggunakan alat peraga *circulatory bottle* untuk meningkatkan hasil belajar siswa pada materi sistem peredaran darah memberikan hasil yang baik terhadap pembelajaran IPA. Siswa terlihat lebih aktif dan semangat dalam mengikuti kegiatan belajar mengajar dari pada sebelumnya. Dan memudahkan guru dalam menyampaikan materi kepada siswa, karena materi sistem peredaran darah materi yang bersifat abstrak. Kedua, hasil belajar siswa menunjukkan terdapat perbedaan hasil belajar siswa antara yang menggunakan alat peraga dengan yang tidak. Pada saat proses pembelajaran berlangsung siswa terlihat semangat dan fokus memperhatikan guru yang sedang menyampaikan materi. Alat peraga *circulatory bottle* dapat mendorong kreativitas siswa dalam mengajukan pertanyaan, menjawab, membenarkan dan menyanggah jawaban yang kurang tepat ketika sedang berdiskusi.

Kata Kunci: Pembelajaran IPA, Circulatory Bottle, Sistem Peredaran Darah.

Abstract

One of the problems that often arise is the difficulty of Madrasah Ibtidaiyah teachers in conveying science concepts through life phenomena. The purpose of this study was to determine the pattern of learning by using the circulatory bottle as an aid to improve student learning outcomes. This research method uses descriptive qualitative and analytical techniques referring to the concept of Miles & Huberman with the research subject involving teachers, madrasah principals, and students of class V (five) MI Nurul Hasanah Sukaharja, totaling 23 students. The results of this study First, the learning pattern using the circulatory bottle props gave good results. Students look more active and enthusiastic than before. And make it easier for teachers to convey material to students because the material for the circulatory system is abstract material. Second, student learning outcomes show that there are differences in student learning outcomes between those who use teaching aids and those who do not. When the learning process takes place, students look enthusiastic and focus on paying attention to the teacher who is delivering the material. The circulatory bottle props can encourage students' creativity in asking questions, answering, justifying, and refuting inaccurate answers when discussing.

Keywords: Science Learning, Circulatory Bottle, Circulatory System.

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INTRODUCTION

Education has an important role in the process of developing a nation. The world of education is expected to provide professional human resources to advance the country with its science and technology. Education is a system that aims to shape thinking, develop character, and increase existing potential to educate the life of the nation and state (Manurung, I. F. U., 2019).

The rapid development of science and technology will affect the development of the world of education and learning, especially in the field of educational technology whose impact also demands changes in the field of learning technology to improve the quality of learning with more optimal results. One of the applications of educational technology into learning technology is the change in the role of the teacher and the development of teacher duties which have an impact on changes in learning patterns starting from the traditional pattern where the dominant teacher is the only source of learning (Edi Suhartono, 2018). Quality education can be seen from various aspects, among others; from the aspect of implementation and management, input, process, output, and outcome. Quality education inputs are professional teachers, quality students, quality curriculum, and quality facilities and infrastructure (Nurdiansyah, Nana Meily, et al, 2021).

Then the progress and achievement of students are very dependent on the pattern of learning applied in schools because the school is the second place of learning after the family. Some things that are very important to the quality of student learning include learning methods, teacher competencies, and existing infrastructure in schools (Kurniasari, N. D., 2016). Therefore, the right learning pattern by the teacher will greatly affect student learning outcomes.

Science is a science that deals with how to find out about natural phenomena and is systematic, so that science is not only the mastery of a collection of knowledge in the form of facts, concepts, or principles but also a process of discovery. This shows that learning science is a science that must be learned through direct observation. Not all materials can be delivered or are suitable for using the lecture method. This is one of the factors that are less than optimal student achievement in learning.

Science learning that presents real concepts in everyday life has more potential to develop students' experience and competence in understanding nature and the surrounding environment based on science concepts (Fikriya, A., & Fajar, D. M., 2020). Some of the science problems stem from the methods and media used by teachers in learning. One of the problems that often arise in learning science is the difficulty of teachers in conveying science concepts through phenomena of everyday life. Thus, there is a need for learning media that can attract students' attention so that students are more enthusiastic about participating in learning. One of them is with the help of teaching aids that function to help the teaching and learning process so that students gain real experience.

Learning science, especially on the material of the human circulatory system for fifth-grade elementary school children, requires concrete media. Concrete media is needed because according to cognitive development theory that children aged 7-11 years enter the concrete operational stage. This stage shows where children begin to think logically by using tangible objects. Therefore, the use of concrete media can certainly help students understand the material of the human circulatory system which cannot be observed directly in the human body (Arsyad Ahzar, 2002).

Direct experience will give the most complete and meaningful impression because it involves many senses, namely sight, hearing, smell, touch, and others. Based on the explanation above, that the use of teaching aids in learning is highly recommended because by utilizing teaching aids that are under the material, it will be more effective to directly demonstrate and conduct experiments.

Based on the results of interviews with the fifth-grade teacher of MI. Nurul Hasanah, for the 2020/2021 academic year, there are 23 students. The learning process of class V students on the material of the Human

Circulatory System runs less effectively. Many students do not pay attention to the teacher who is explaining the material. They prefer to do other activities rather than listen to the material being explained by the teacher. There is no visible involvement of students in the learning process, even though the material for the circulatory system in humans requires attention and concentration from students. Students look bored and do not like the learning process that is being presented by the teacher. Student activity looks low, especially in asking questions and compiling reports on the results of discussions. As a result, overall learning outcomes in the circulatory system are still low and the average class is still below the KKM (Minimum Completeness Criteria) that has been set by the teacher.

In general, the use of teaching aids can at least boost learning outcomes as a result of high curiosity, so that the role of education can realize independent learning, which means that students have the freedom to innovate, be independent, and be creative. This is then why this research needs to be done, considering the massive developments of the times to be followed, not avoided. This is then, which is one of the factors of the gap in the existence of different views to make a breakthrough that is out of the box. It is not easy to do. Therefore, education with various human resources must be able to respond well to the future, including through; first, commitment to increasing investment in digital skills development; second, Always try and apply the latest technology prototypes, Learn by doing!; third, explore new forms of collaboration for certification or education models in the realm of increasing digital skills; fourth, Collaborating between industry, academia, and the community to identify the demand and availability of skills for the digital era in the future; fifth, Develop an Islamic religious education curriculum that has included material related to human-digital skills (Armai Arief, in the notes of the National Seminar on Challenges of Islamic Education in the Era of Society 5.0 in 2021).

Referring to the various problems above, the author tries to conduct research related to learning at the elementary level or Islamic elementary school which focuses on 5th-grade students with the title Science Learning Patterns for SD/MI; Use of circulatory bottle props on the circulatory system. The title directs the formulation of the first, How is the learning pattern that uses the circulatory bottle props on the circulatory system to improve the learning outcomes of Class V SD/MI students; and second, what are the advantages and disadvantages of the circulatory bottle props.

METHODOLOGY

The research method used in this study is a qualitative or descriptive qualitative method. A qualitative method is a research procedure that produces descriptive data in the form of written or spoken words from people or observable behavior (Moleong, L. J. 2021). Thus, it can be concluded that qualitative research is a study that aims to understand a case, event, or social problem in the form of individuals or groups. In the world of education, qualitative research understands the behavior of school leaders, educators, curriculum, a group of students, a program, the implementation of policies, and so on with various scientific methods. (Lutfiyah, M. F, 2017).

The subjects of this study involved the class teacher, the principal, and the students of Class V (Five) at Madrasah Ibtidaiyah Nurul Hasanah Sukaharja, totaling 23 students. While the data collection techniques include interviews, observation, and documentation (Herdiansyah, H. 2013). The data analysis technique in qualitative research refers to the concept of Miles & Huberman (2002) which is carried out continuously during the research, starting from data collection to the stage of writing reports. This means that data collection and data analysis are carried out simultaneously. During the research process, a researcher continuously analyzes the data until it is complete so that the data is saturated (Wijaya, H. 2020). The following is a detailed table of data analysis components.

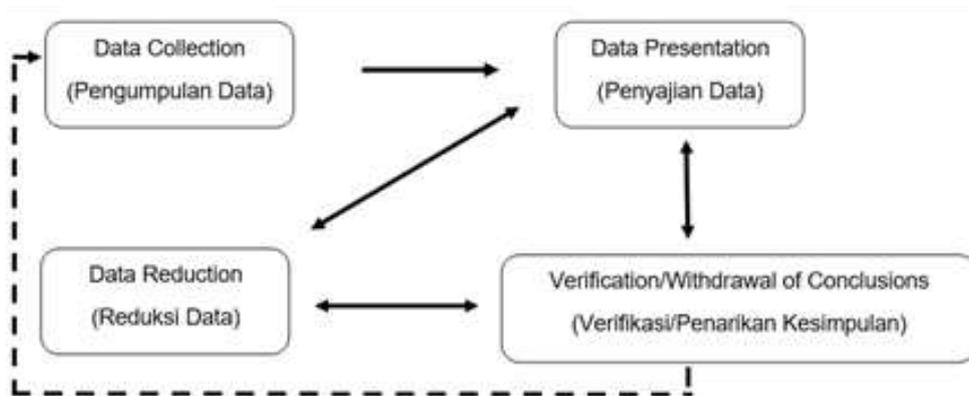


Figure 1. Data Analysis Components

This study seeks to determine learning patterns by using circulatory bottle props to improve student learning outcomes. Therefore, the descriptive method is considered appropriate to study and analyze data objectively based on the facts found in the field.

This research was carried out for a period of 4 months starting from February to May 2021 at Madrasah Ibtidaiyah Nurul Hasanah Sukaharja which is located at KP. Pasir Gadung RT.01 RW. 01 Sukaharja Village, Sindang Jaya District, Tangerang Regency, Banten Province. The validity of the data obtained from a study can be done using triangulation as checking data from various sources in various ways and times. So there is the triangulation of sources and triangulation of methods.

RESULT AND DISCUSSION

Teaching aids are media learning aids, and all kinds of objects used to demonstrate learning materials (Arsyad, A. 2002). The teaching aids here contain the understanding that with something that is still abstract, then concreted using teaching aids can be reached with a simple mind and can be seen, seen, and felt so that learning becomes more effective and efficient. The circulatory bottle props are learning media that visualize the circulatory system in humans (Imasnuna L, 2016). The tool is made from used materials by using a cross-sectional model of blood circulation from a wooden board, in the heart, there is a bottle that functions as a foyer and a chamber, as well as blood vessels using a hose and filled with red-dyed water. The device is also equipped with a pump that can circulate blood so that students can observe the process of blood circulation in humans (Pambudi, B., Efendi, R. B., Novianti, et al, 2018).

The use of the circulatory bottle props begins by pressing the water pump button located at the back of the cross-section so that when the water pump is on, the liquid will immediately go down to the organs on the media where it flows into the lungs, atria, and chambers. The following is a picture of a circulatory bottle.



Figure 2. The circulatory bottle props front and back

Description of Observation Results

To obtain a collection of data needed about the learning process using circulatory bottle props on circulatory system material to improve learning outcomes, several stages were carried out, first observation to obtain information from class conditions, and learning activities in the classroom. In the stages of the learning process, the researchers observed how the learning process used the circulatory bottle props on the circulatory system to improve the learning outcomes of Class V (five) MI/SD students. The following is a description of the observations made.

1. Observation results

Observations were carried out in the room, namely in the Class V MI Nurul Hasanah room with a total of 23 students. This data was obtained by the researchers after observing directly the teaching and learning activities carried out by students in the class during the science lesson. From this observation activity, the researcher not only observed the attitudes and abilities of the students, but also the teacher's competence and the way the teacher delivered the material.

Data obtained from observations, researchers found that: First, when teaching in class the teacher still uses the lecture method and without using interesting methods or media so that students tend to be passive in learning. Second, the lack of student interest in participating in-class learning, because in science subjects the discussion of the human circulatory system becomes boring material because it is only listening to lectures that can only be imagined. And the teacher conveys the material without using the media so that students are less enthusiastic, and less interested in participating in learning activities.

The results of interviews with students also show that they feel bored with science lessons which are always taught with the same media. They tend to be lazy and less enthusiastic about taking lessons. Therefore, the madrasa is very helpful and really hopes that there are parties who can work together with teachers to make science learning media, especially material for the human circulatory system that is effective and in accordance with learning so that it can make the learning atmosphere in the classroom more lively, active, fun. and learning objectives can be achieved optimally.

Science learning which has a higher level of difficulty and abstraction of concepts certainly requires different ways and methods of communication from other subjects. In terms of the object of science learning, the subject of the abstract circulatory system is required media and special teaching aids to convey it. Media that can be used to convey science material can come from existing objects or media specifically made for this.

2. Planning

There are several things that must be done before learning activities using circulatory bottle props by the teacher, namely preparing material that can be seen in LKS books or the internet related to the discussion of the

human circulatory system. And prepare or re-examine the props so that when they are used in class there are no problems with the props. Then do not forget the teacher prepares lesson plans.

3. Implementation

In the implementation of the learning process, the teacher explains the material to be delivered, carries out what is arranged in the RPP, then carries out the steps for using the circulatory bottle props correctly.

4. Student participation

When the learning process uses circulatory bottle props, we can see how students participate in learning. In this activity, student participation is very good, students look more active than before and are enthusiastic about participating in the learning process using these props because students demonstrate to each other every question that the teacher gives. From here we can see that the learning process by using the circulatory bottle props to improve student learning outcomes is starting to run well.

5. Improving student learning outcomes

After the teacher uses the circulatory bottle props in the science learning process discussing the circulatory system, of course, we want to see how successful the students are, as seen today, students are more happy and enthusiastic in learning. The success of students will be seen from the results of the PAT (End of Year Assessment).

Description of Research Results

After all the data is presented, the next step is to analyze all the data obtained, namely regarding everything related to learning patterns using the circulatory bottle props at MI Nurul Hasanah. These data include starting from planning, implementing, and managing student learning outcomes in class. Below is an analysis of the data that has been obtained in the research conducted by the researcher, for more details the researcher groups this data into two components, namely: *First*, the Learning Process in Class V (five) MI Nurul Hasanah and *Second*, Disadvantages and advantages of circulatory props bottles. The description is as follows:

1. Learning Process in Class V MI Nurul Hasanah

The teaching and learning process is a process of interaction that occurs between teachers and students to achieve a certain goal. The process is also influenced by the relationship that exists in the process itself, so that the way students learn is also influenced by their relationship with the teacher. In some cases, if the relationship between the teacher and students is well established, then students will like the subjects delivered by the teacher (Murdiyanto, et al, 2014).

Teaching aids are intermediaries or introductory learning messages. Learning to use teaching aids means optimizing the function of all five senses of students to increase the effectiveness of students learning by listening, seeing, touching, and using their minds logically and realistically (A. Widiyatmoko, 2012).

The learning outcomes of students in the science subject matter of the circulatory system at MI Nurul Hasanah when using circulatory bottle props have increased as evidenced by several questions given by the teacher and judging from the conditions in which the learning takes place, students are very active in contributing to the teacher. The learning process carried out by the student acquires a new change in behavior as a whole, as a result of his own experience in interaction with his environment. Students also understand more clearly about the human body's circulatory system, which so far students only use images as visual media. Cultivate a high curiosity so that it helps the understanding process. The following is a description of the analysis from researchers related to learning patterns using circulatory bottle props including:

First, planning. Several things were done before the learning process activities, namely preparing materials and media. Before going to the core material, the teacher must explain what is the meaning of the circulatory system, blood, circulatory system, and others, so that students can understand, master the material

and teaching aids that will be delivered and prepare the lesson plans. In the process of teaching and learning activities, the teacher will explain the material about the circulatory system in humans. The human circulatory system is a biological process that occurs in the human body whose role is to circulate food substances or juices throughout the body and remove waste substances to the excretory device (expenditure). The human circulatory system consists of blood and human circulatory organs.

Second, implementation. In the implementation of the learning process using the circulatory bottle props by the teacher, namely: a). The teacher prepares students and explains to students what will be learned and why it is important to learn so that students' curiosity arises; b). The teacher asks students to browse through the material first by reading the LKS book; c). After the students finished reading the LKS book, the teacher asked questions to find out the students' initial knowledge about the material of the human circulatory organ; d). The teacher introduces the circulatory bottle prop that will be used when learning and students respond to it, and try to interact directly with the teaching aid media; e). The teacher explains the core material, namely how the heart works, small and large blood circulation by demonstrating the circulatory bottle props; f). After finishing explaining the material, the teacher invites students to ask if there is the material that has not been understood; g). The teacher invites some students to re-enact the circulatory bottle props so that students can know how to use the props correctly; h). The teacher ensures that all students understand the material that has been explained.



Figure 3. Implementation of the learning process using the circulatory bottle

Next, the teacher gives the LKPD (Student Performance Sheet) (Maimufi R, 2021) regarding the material on the circulatory system that has been delivered by the teacher. There are several questions regarding the material that has been delivered, namely; First, Mention the organs of the body that play a role in human blood circulation!; Second, Explain the function of the heart!; Third, Mention the difference between small blood circulation and big blood circulation!; Fourth, how do we keep our blood circulatory system healthy?



Figure 4. Students are writing their LKPD results on the blackboard

Then the teacher instructs all students to do it and reminds students of the material that has been delivered by the teacher. After all, students have worked on the LKPD, the teacher appoints one student to read and write the answers on the blackboard, then the teacher will ask the other students whether the answer is right or wrong. If it is correct, the student will be immediately invited to sit back and if it is still not correct, the student is asked to stay in front to wait for the correct answer from his friend. After the question has been answered with the correct answer, the teacher will review the circulatory system material so that students can recall the material.

Third, student participation. In the learning process activities using teaching aids and those not using teaching aids, it looks very different, one of which can be seen from student participation. Student participation is very good because it has encouraged students to be more active and think critically when the teacher begins to give questions that stimulate their minds to answer them immediately. And students help each other or share knowledge with other students who do not know.

The participation that the researcher means is the active participation of students in learning activities which is a tangible form of student behavior in learning activities which is the totality of a mental and emotional involvement of students so as to encourage them to contribute and be responsible for the achievement of a goal, namely the achievement of learning achievement. satisfactory.



Figure 5. The state of student participation when the learning process takes place

Fourth, Improving student learning outcomes. After using the circulatory bottle props, namely, the increase in student learning outcomes that are seen at this time or seen directly during the learning process, the enthusiasm of students makes them active in teaching and learning activities in class and can think critically in answering or justifying incorrect answers. which have been answered by other students.

Next is the assessment of learning. From the observations obtained by the researcher, the fifth-grade teacher (five) has assessed knowledge, attitudes, and skills. For knowledge assessment, the teacher does this by giving practice questions contained in the LKS book and sometimes the teacher makes his practice questions to give to students. Furthermore, the assessment of attitudes is seen and their daily activities in following the

learning process or when interacting with classmates, for example in learning students must have the courage to express their opinions. And for skill assessment, the fifth-grade teacher sometimes gives homework in the form of drawing skills or making handicrafts.

Teaching aids are part of the learning media. Through the use of teaching aids, abstract things can be presented in a concrete form that can be seen, held, tried so that the learning materials presented by the teacher can be easily understood by students (Pindo Hutauruk, 2018). Teaching aids in learning is a tool used to show something real to clarify the meaning of learning. Teaching aids can clarify the teaching materials provided by the teacher to students so that it is easier for students to understand the material or questions presented by the teacher. Teaching aids also attract students' attention and can foster interest in participating in science learning (Ayomi Prasetyarini et al, 2013).

And for reflection on the learning process and material, the fifth-grade teacher (five) has done it by asking questions about the lessons that have just been learned by students so that students can recall the lessons that have been done. After that, the teacher gives homework related to the lesson. Learning success is a learning achievement that has been achieved by students in the process of teaching and learning activities by bringing a change and the formation of one's character. To be able to state that a learning process is said to be successful, every educator or teacher must have their views that are in line with their philosophy.

Fifth, the evaluation will be delivered after the learning activities. Evaluation is carried out after teaching and learning activities, namely by reviewing the material that has been delivered, namely by asking questions that are different from the previous questions and providing opportunities for students who have not had time to answer them in front or on the blackboard, then motivate students to help each other. or share knowledge with other students.

Evaluation is an activity contained in every learning process, which means that evaluation activities are placed as an inseparable activity in every teaching and learning activity in the classroom and outside the classroom (Sary, Y. N. E. 2018) . Why is that? Because evaluation is not only oriented or only focused on results (product-oriented) but also on the learning process as an effort to monitor the development of students' potential both in the development of their abilities and mental and psychological development.

2. Disadvantages and advantages of circulatory bottle props

In the world of education, there are many innovations made by educators to make the learning process in the classroom successful in accordance with the indicators or learning achievement goals that have been arranged in the lesson plans. For this reason, this planning is contained in a learning approach that includes learning media.

Learning media is an inseparable part of learning activities in schools. The utilization of learning media is also a creative and systematic effort to create experiences that can help students' learning processes. Therefore, teachers or schools must try to hold learning media because the media plays an important role as a learning stimulus tool and can foster learning motivation so that students do not get bored easily in following the teaching and learning process.

Teaching aids have a very important role in improving student learning outcomes, including First, they can clarify the teaching materials delivered by the teacher; Second, they can provide a real experience to students, and third, they can stimulate students' thinking which is more creative in learning. The implementation of learning that must be carried out by teachers is to change attitudes and learning patterns because so far teachers tend to use the lecture method and have not been able to produce and use teaching aids that can support the quality learning process and produce outstanding students. The following table presents the advantages and disadvantages of teaching aids in general (Siti Annisah, 2014) , namely:

Table 1
Advantages and Disadvantages of Teaching Aid Media in General

No	Advantages of Media Props	Lack of Media Props
1	Cultivate an interest in learning because lessons become more interesting. Clarify the meaning of learning materials	The generalization of the abstract concept of the concrete representation is not achieved.
2	so that students can understand them more easily.	Just a dish that has no values (concepts).
3	Teaching methods will be more varied and students will not get bored easily.	Presentation is given to children who do not need it.
4	Making students more active in carrying out learning activities such as observing, doing, demonstrating and so on.	Sometimes the media is unattractive and the procedure is complicated to use. And if a little disturbed becomes damaged, and so on.

Furthermore, implicitly the advantages of the circulatory bottle props are to help students understand the human circulatory system, the teacher's explanation is also easier for students to catch and then recall than without using props. In addition, the manufacture of these props is practical and easy by utilizing used materials that are no longer used.

Meanwhile, the shortage of the circulatory bottle props is that there is no support or holder for the props so that when they are used they cannot stand alone, they must be held by the teacher. The teaching aids should be given a seat so that they can stand without being held by the teacher or students. In addition, so that the circulatory bottle props are more attractive and colorful, the wooden boards are colored with wood paint.

The learning process is strived to be interesting if in every teaching and learning process using teaching aids correctly. Although the use of teaching aids still gives rise to various opinions and views, these differences should be seen as adding to the treasury of knowledge for all. The use of teaching aids plays a very important role in the delivery of subject matter for educators. With the aim of teaching aids will clarify the material presented or taught. Thus, teaching aids can also be interpreted as something that can be used to channel messages, feelings, concerns, and abilities of students, so that they can be encouraged to be involved in the learning process.

Efforts to optimize the use of teaching aids in each lesson, understanding the characteristics of learning aids is a fundamental ability that must be possessed by teachers concerning the skills of selecting and using learning aids. In addition, to provide the possibility for teachers to use various types of teaching aids in a variety of ways, while if they do not understand the characteristics of these learning aids, the teacher will be faced with difficulties and tend to be speculative in the selection and use of learning aids.

According to Suyanto and Asep Jihad (2013), each teaching aid has characteristics that need to be understood by its users. In choosing teaching aids, there are 3 (three) things that need to be considered, namely: First, the clarity of the purpose and objectives of the selection of the teaching aids; Second, the nature and characteristics of the props to be selected; Third, the existence of several teaching aids that can be compared because the selection of teaching aids is a decision-making process for alternative solutions demanded by the goal.

As for the selection in choosing or making good teaching aids, the teacher must understand the pattern of its use by considering several conditions, including; First, the material is durable (made from materials that are strong enough); Second, the shape and color attract the attention of students; Third, Simple and easy to manage; Fourth, the size is by the teaching and learning space; Fifth, Can present concepts in the form of real, images, or diagrams; Sixth, Can clarify the concept and not vice versa; Seventh, the demonstration must be able to become the basis for the growth of students' thinking concepts; Eighth, Making students learn actively and independently by manipulating and engineering teaching aids; Ninth, Adding fun and interest to learning.

Because of the above, the novelty of this research has an impact on the aspects of students' skills in utilizing various simple materials as a means of providing motivation and enthusiasm for learning as well as providing stimulation from moral values or national character such as curiosity, empathy, and responsibility. This can be seen from the enthusiasm of students to actualize or express themselves when learning takes place and after.

He continued that this research supports Abraham Maslow's (2013) opinion on motivation theory in psychology which explains that motivation is closely related to the assumption that whatever humans do is with the aim of meeting all needs, both physical and psychological needs. Certain basic needs must be satisfied before satisfying higher needs. The highest and most difficult need in Maslow's hierarchy is given special attention, namely self-actualization. According to him, individual needs must be satisfied in the following order: first, physiological; second, security; third, love and belonging; fourth, self-esteem; fifth, self-actualization.

Apart from the views expressed, that this research also has limitations, both in terms of providing teaching aids, conditioning students who are very enthusiastic so that it makes noise for those who want to try. And this is a form of response of the learning process to scientific developments considering the position of our education is in the industrial era 4.0 towards the Society 5.0 era. Changes in the direction of educational policy will have an impact on the success of students in the future, one of which is in terms of educational psychology, namely, the behavioristic flow as a flow whose development has existed from time to time. This school believes that learning is a change that is evidenced by behavior which is characterized by the presence of two factors, namely stimulus and response (Indrawan, Deni, 2021). Further relevance, it is known that several 21st-century skills must be learned and mastered by humans, namely: first, ways of thinking (including creative thinking and innovation, critical thinking and problem solving metacognitive thinking); second, the way of working (including the ability to communicate and collaborate); third, the ability to use information and technology; fourth, living in the world (social skills both locally and globally); fifth, life and career; sixth, personal and social responsibility including culture (Franzhardi, D., & Kristiawan, M, 2021). The shift from the era of industrialization to the era of information and knowledge requires human resources who have the skills, especially those who can keep up with the rapid development of technology. This encourages the identification and definition of 21st-century skills and a paradigm shift in the learning process in the classroom.

CONCLUSION

Learning patterns using the circular bottle props can help students to understand the material presented by the teacher. Even students look more active and enthusiastic in participating in teaching and learning activities than before. The circulatory bottle props are also one of the science learning media that can make it easier for teachers to convey material to students because the circulatory system material is abstract material that requires learning media. Furthermore, based on student learning outcomes, it shows that there are differences in student learning outcomes between those who use teaching aids and those who do not use visual aids on the material of the circulatory system. When the learning process takes place, students look enthusiastic and focus on paying attention to the teacher who is delivering the material. The circulatory bottle props can encourage students' creativity in asking questions, answering, justifying, and refuting inaccurate answers when discussing. The use of teaching aids can at least boost learning outcomes as a result of high curiosity so that students can realize independent learning, which means students have the freedom to innovate, be independent, and be creative.

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