PULMONOLOGY

Impact of Instructional Media and Learning Preferences on Cognitive Performance in Foundational Health Science Education

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Abstract:
This study aims to determine the effect of learning media and learning styles on learning outcomes in the cognitive domain of students in basic physiology subjects. This study used a quasi-experimental method using a 2X2 factorial design. The findings indicate that: (1) the learning outcomes of students who use model learning media are higher than those of students who use image learning media (2) the learning outcomes of students who have a kinesthetic learning style are higher than the learning outcomes of students who have visual learning styles. (3) there is an influence of the interaction between learning media and learning styles on student cognitive learning outcomes in Basic Physiology courses. (4) cognitive learning outcomes of students who have a kinesthetic learning style who learn using model learning media are higher than realm learning outcomes. cognitive students who have a kinesthetic learning style who learn using image learning media. (5) cognitive learning outcomes of students who have visual learning styles who learn using learning media models are lower than those of students who have visual learning styles who learn using image learning media. (6) the cognitive learning outcomes of students who have a kinesthetic learning style who learn using model learning media are higher than the cognitive learning outcomes of students who have a visual learning style who learn using model learning media. (7) the cognitive learning outcomes of students who have a kinesthetic learning style who learn using image learning media are lower than the cognitive learning outcomes of students who have a visual learning style who learn using image learning media.

Keywords: learning media, learning style, learning outcomes in the cognitive domain of basic physiology

INTRODUCTION

The development of science and technology, changes in society, understanding of children's learning methods and the progress of communication and information media give its own meaning to these contemporary educational activities . One of the positive impacts of science and technology development on the learning process is the increasing diversity of learning sources and media, such as textbooks, modules, pictures, models, films, videos, television, slides, and so on. A professional teacher is required to be able to select and use

various types of available learning media so that they can effectively improve the quality of learning.

According to Reigeluth (1983: 32) learning media is an important component of the learning delivery strategy. Selection of media is important in the learning process and it is believed that the selected media will be able to bring the learning process to a pleasant learning situation. Furthermore, a fun learning process is expected to trigger the creativity of teachers and students who are more active in learning. In selecting media, a teacher needs to consider the suitability and availability of the media that will be used.

Regarding the presence of this media, Munadi (2010: 2) explains that the use of media is very helpful in the learning process activities both inside and outside the classroom, especially in improving student learning achievement. This opinion is in line with Gagne's theory that media are various types of components of the student environment that can stimulate them to learn. From the description, it shows that the presence of the media greatly affects the quality of the learning given.

Optimal learning outcomes can be achieved by being influenced by several factors, namely internal and external factors. According to Syah (2010: 129), the factors that affect student learning globally are divided into three types, namely: (a) internal factors (factors from within students), namely the physical and spiritual conditions of the student, (b) external factors (external factors), the environmental conditions surrounding the student and (c) factors of learning approach*(approachto*learning),which is the type of student learning effort that includes strategies and methods used by students to perform learning activities learning materials.

Furthermore, learning outcomes are the results achieved by students who have followed the learning process which is basically something that is obtained from a learning activity that results in changes in the individual, namely changes in the material level of the anatomical system, physiological system and behavior (metabolism), both aspects. knowledge, skills, and aspects of his attitude.

From the observations, it was found that there were gaps in the field that made the learning process in the classroom not take place effectively and efficiently. To overcome this gap, it is necessary to identify the problem factors that cause the gap to occur.

In other words, the principle of cooperation in groups is not given much attention. If group cooperation is carried out, generally what happens is students with higher achievement are dominant to master the material given, while students with low achievement are less active and are impressed only as spectators during group collaboration. In fact, in order for the class to be more productive, in learning, cooperation between fellow group members who have different backgrounds of knowledge in solving various problems is needed.

The limited use of technology in education, especially learning media is one of the reasons for the weak quality of education in general. As in the Department of Physical Education for Health and Recreation (PJKR), there are still many students who have weak abilities in several subjects. Among the subjects in question is Physiology. This course is a very important subject in the department and it is the most basic of all.

The weakness seen here is also due to the media used so far only textbooks and pictures, for physiology courses it is very important to use other media, which is like a model that is similar to the original object, namely *phantom*. *Phantoms* are objects that are made similar to human organs, besides that, animation media are no less important, such as CAI (*Computer Assisted Instruction*) or computer-based learning. Along with the development of science and technology and the increasing demands of the era, the quality of education needs to be improved by completing learning facilities and infrastructure, until now STKIP Muhammadiyah Kuningan does not have adequate facilities and infrastructure.

This condition causes the ability of PJKR undergraduate students in physiology to be unsatisfactory.

Based on the graduation standard set at STKIP Muhammadiyah Kuningan, a minimum score of 60 (C) for all subjects. Based on the table above, the average student has reached the graduation standard, namely the grade of 60 (C) but there are still students who have not graduated and the highest score is still assessed as 70 (B). The low scores in this subject cause difficulties for students in following other related subjects such as advanced physiology, physiology, etc. If this condition continues, the expected competence of a PJKR study program student will not be achieved satisfactorily.

Apart from the problem of the lack of use of instructional media, the characteristics of students, especially their learning styles. Uno explained (2006: 143) that identifying the input behavior and student characteristics is very necessary to determine the quality of the individual so that it can be used as a guide and describe the learning management plan. The basic aspects are the student's learning style. This mainly occurs because of the mismatch between student learning styles and teaching styles of educators, considering that the Basic Physiology course is given in semester 3, this is in accordance with the opinion of Bobbi DePorter and Mike H (2009: 120) which states that the mismatch of learning styles very often occurs at the turn. high school to college because teaching shifts from very visual to highly auditory. This is in line with the differences in the curriculum used and the demands of each institution in stages.

Educators need to recognize the learning styles of their students because not all students process information in learning the same way. Therefore, educators need to know how the brain's working style is translated into different learning styles. A person's learning style is a combination of how he absorbs and then organizes and processes information. Learning styles are not only aspects when dealing with information, seeing, listening, writing and speaking but also aspects of partial, analytical, global or left-right brain information processing, another aspect is when responding to something to the learning environment (absorbed abstractly and concretely) . There are 3 (three) types of learning styles, namely Visual (tend to learn through what they see), Auditory (tend to learn through what they hear) and kinesthetic (learn by moving, working and touching). Learning outcomes are still an indicator to assess the level of success of students in the learning process. Good learning outcomes can reflect good learning styles because knowing and understanding the best learning styles for them will help students learn so that the resulting achievement will be maximized.

In order for the learning objectives to be achieved effectively and efficiently, student learning styles need to be considered and considered in determining the learning media to be used, especially in the Basic Physiology course in the S-1 PJKR Study Program. Based on the gap between expectations and reality that occurs in students in the PJKR S-1 Study Program and the low learning outcomes of Basic Physiology courses, it is necessary to conduct research on the effect of learning media, in this case learning media models and pictures and learning styles on learning outcomes. Basic Physiology of Undergraduate Study Program students of PJKR STKIP Muhammadiyah Kuningan with this learning media, as well as learning styles in the teaching and learning process are thought to have an influence on learning outcomes.

As one component of learning, media can not escape discussion learning system as a whole. The use of media should be a part that must get the attention of lecturers in every learning activity. But in reality this part is still often overlooked for various reasons. Reasons that often arise include: limited time to prepare for teaching, difficulty finding the right media, unavailability of funds, and so on. This actually does not happen if every lecturer has equipped themselves with knowledge and skills in terms of learning media. In each learning process, to avoid student burnout, lecturers must be able to overcome it by utilizing media in the learning process. The benefits of the media are as follows: 1) Clarify the presentation of the pesam so that it is not too verbalistic. 2) Overcoming the limitations of space, time and human senses. 3)

Generating student learning passion. 4) Allows a more direct interaction between students with the environment and reality. 5) Allows students to learn on their own according to their abilities and interests. 6) Can provide the same perception for students.

According to Koyok and Zulkarnaen NST in Zainudin HRL (1984: 38) said as follows: "The use of media in learning must be in accordance with the learning objectives to be achieved, efficiency, the condition of students, availability, technical quality and cost", from the opinion expressed by Koyok and Zulkarnaen can be explained as follows:

1) The goals to be achieved; The media chosen must support the achievement of formulated teaching goals. and this is the main requirement in choosing learning media.
2) Efficiency; The media chosen must be adapted to the aspects to be studied (motion aspects or still aspects), for example motion, then the suitable media is film or the like.
3) The condition of the students; In choosing it must be considered the level of ability of students and the size of the user group.
4) Availability; In choosing the media, you should consider the ease of getting the media and in using it.
5) Technical Quality; The selected media must be able to be operationalized properly and not endanger the wearer.
6) Cost; strived as low as possible in realizing the media, but has high effectiveness.

According to Molenda (1996; 103) "*Models are three dimensional representation of real nothing. A models may be larger, smaller, or the same size as the object it represents. It may be complete in detail or simplified for instructional purposes ”*. (A model is a three-dimensional medium that represents the actual object. The model can be bigger, smaller or the same as the original object, and almost all objects can be modeled). Thus it can be concluded that the model is an artificial object made by lecturers or factory-made to facilitate the teaching and learning process, with a smaller size, larger than the original object.

Image media is a two-dimensional learning media which is an outpouring of human feelings towards real objects. In line with the opinion expressed by Soendjojo Dirjo Soemarto (1981; 27) that what is meant by image media is: "Media which is the production of original forms in two dimensions, image media can be in the form of photos or paintings". So it is clear that image media can be created by lecturers themselves as a substitute for the actual media. Among learning media, pictures are the most commonly used media. Pictures are a common language, which can be understood and enjoyed everywhere. Therefore, the Chinese proverb says that a picture speaks more than a thousand words. The image media used in this study are two-dimensional images of the human skeleton.

The learning styles that students have are often referred to as learning styles or student learning modalities. Learning style is a combination of how it absorbs, and then organizes and processes information (DePorter & Hernacki, 2002: 110), whereas according to S. Nasution, "learning style is a consistent way that is used by a student in capturing stimulus or information. how to remember, think, and solve problems. " Rina Dunn, a pioneer in the field of learning styles, has identified many variables that influence how people learn. This includes physical, emotional, sociological, and environmental factors. Some people, for example, learn best in bright light, while others study in dim lighting. Some people learn best in groups, while others prefer authoritarian figures such as parents or lecturers, others feel that working alone is most effective for them. Some people need music in the background, while others cannot concentrate except in a quiet room. There are people who need an orderly and tidy work environment, but others prefer to put things out so that everything is visible.

According to Bobbi De Poter & Mike Hernacki quoted by Sukadi, based on the meaning of the word, visual learning style is a learning style by seeing, observing, seeing, and the like. The power of this learning style lies in the sense of sight. For people who have this style, the eye is the most sensitive tool to pick up on any learning symptom or stimulus. People with a

visual learning style enjoy following illustrations, reading instructions, observing pictures, observing events in person, and so on. This greatly affects the choice of learning methods and media that predominantly activate the sense of sight (eyes).

Auditory students rely on their learning success through the ear (hearing aid). Students who have an auditory learning style can learn faster by using verbal discussion and listening to what the lecturer has to say. They can properly digest the information conveyed through voice tone, pitch (high and low), speaking speed and other auditory matters. Written information is sometimes difficult for students to accept auditory learning style. Such individuals can usually memorize faster by reading text aloud and listening to tapes.

Kinesthetic learning style is a learning style by moving, working, and touching. The point is to learn by giving priority to the senses and physical movements. People with this learning style more easily pick up on lessons when they move, feel, or take action. For example, he only understands the subtle meaning when his sense of taste has felt a subtle object. Individuals of this type, it is easy to learn material in the form of writings, movements, and it is difficult to learn material in the form of sound or sight. In addition, learning is kinesthetic related to practice or learning experience directly.

RESEARCH METHODS

In this study, a quasi-experimental research method was used which involved three variables, the two variables to be studied were the learning media model (X_1) and the image learning media and the moderator independent variables were distinguished into two groups, namely the kinesthetic learning style and the visual learning style. X_2) and the dependent variable is the student learning outcomes in the cognitive domain of the basic physiology subject (Y) with a 2x2 factorial design. The population in this study were all students of the PJKR STKIP Muhammadiyah Kuningan study program for the 2020/2021 academic year, totaling 466 students, while the affordable population was all 3rd semester students of the PJKR study program who took the Basic Physiology course, which consisted of 3 classes with details, class $PJKR_1$ = 30 people, $PJKRclass_2$ = 31 people, and $PJKRclass_3$ = 30 people. The sampling technique was conducted by *random*/ random, which took two classes from three classes Prodi PJKR 3rd semester students who take a course in Basic Science Physiology, through the drawing of three classes: PJKR classes1,$PJKR_2$ and $PJKR_3$.It turned out that the results of the draw that appeared were PJKRclasses$_1$and $PJKR_3$.

Based on the results of the draw, the $PJKRclass_1$ = 30 students as the experimental class were given learning treatment through model learning media and the $PJKRclass_3$ = 30 students as the control class were given learning treatment through image learning media, after class sampling was carried out, then proceed to learning style test to identify the learning styles that students have, but in this study focused only on kinesthetic learning styles and visual learning styles. Determination of the number of samples based on questionnaires learning style, by making the highest score of each test results questionnaire learning styles, having performed a test of learning styles in each group of the study sample consisted of class $PJKR_1$ were 30 students and class $PJKR_3$ totaled 30 students based on the highest score obtained from each of the learning style questionnaire test results, the results to be sampled in this study were 10 students from the $PJKRclass_1$ who have a kinesthetic learning style, 10 students from the $PJKRclass_1$ who have visual learning styles and 10 students from the $PJKRclass_3$ who have a kinesthetic learning style, 10 students from the $PJKRclass_3$ who have a visual learning style.

The data analysis technique used in this study is descriptive and inferential statistical techniques. Descriptive statistical techniques are used to describe the data, including: mean, median, standard deviation (Sd) and data trends. Inferential statistical techniques are used to test the research hypothesis, where the inferential technique to be used is the two-way ANOVA variance analysis technique (2 x 2 factorial design) with a significant level of 0.05. Before the

two-way ANOVA is carried out, first the requirements analysis test is carried out, namely the normality and homogeneity requirements test. To test for normality requirements using the Liliefors test, while for the homogeneity test requirements of variance using the Bartlett test.

RESULTS AND DISCUSSION

Based on the results of the analysis requirements test, the hypothesis testing of this study can be carried out using two-way ANOVA and further testing using thetest *Tukey*.

The results of the two-way ANOVA test calculation can be seen in the following table:

Table 3 Two-Path ANOVA Calculation Results

Source of Variance	Total Squares (JK)	Degrees of Freedom (Db)	Squares Mean (RK)	F_{count}	F_{table} (α = 0.05)
Between Columns (Learning Media)	15.63	1	15.63	1.138	4.116
Between Lines (Learning Style)	126.03	1	126.03	9,179	4,116
Interaction	164.02	1	164.02	11,946	4,116
Between Groups	305.68	3	101.89	7,421	
Within Groups	494.30	36	13.73	-	
Total Reduced (Total)	799.98	39	20.51	-	

Based on the results of the calculation of the two-way ANOVA test, the following conclusions can be drawn:

First hypothesis

From the two-way ANOVA calculation, accepting the null hypothesis (H_0: $\mu_{A1} \leq \mu_{A2}$) which states that the basic physiology learning outcomes of students using learning media are more models. low and the same for students who use image learning media because F_{count} (1.138) <F_{table} (4.116). With the acceptance ofH_o , H_1 is rejected, meaning that there is no difference in learning outcomes in the cognitive realm of basic physiology of students using model learning media with students using image learning media. Based on research data, the average value of student learning outcomes using model learning media (= 17.85) was lower than student learning outcomes using image learning media (= 19.10).

Second hypothesis

From the two-way ANOVA calculation, reject the null hypothesis (H_0: $\mu_{B1} \leq \mu_{B2}$) which states that the learning outcomes in the cognitive domain of basic physiology are students who have a kinesthetic learning style. lower and the same as the cognitive learning outcomes of students who have a visual learning style because F_{count} (9.179)> F_{table} (4.116). Withrejection of H_o theH_1 accepted, meaning that there are differences in the results of cognitive learning basic physiology students who have a kinesthetic learning style with students who have a visual learning style. Based on research data, the average value of student learning outcomes who have a kinesthetic learning style (= 16.70) is lower than that of students who have a visual learning style (= 20.25).

Third hypothesis

From the two-way ANOVA calculation, rejecting the null hypothesis (H_0: interaction A × B = 0) which states that there is no influence of the interaction between learning media and learning styles on student learning outcomes in basic physiology courses because F_{count} (11,946)> F_{table} (4,116). Withrejection of H_o theH_1 accepted, meaning that there is interaction between the media influence learning and learning styles on student learning outcomes in basic physiology science subjects.

The fourth hypothesis

The results of calculations using two-way ANOVA, rejection of the null hypothesis H_0: $\mu_{A1B1} \leq \mu_{A2B1}$. With the rejection of H_0 , $H_{1\ is}$ accepted, meaning that the learning outcomes of basic physiology are students who have a kinesthetic learning style who learn using the learning media higher than students who have a kinesthetic learning style who learns using image learning media. Based on the research data, the average value of cognitive learning outcomes of students who have a kinesthetic learning style using model learning media (= 18.10) is higher than the cognitive learning outcomes of students who have a kinesthetic learning style using image learning media (= 15.30) . The calculation of Tukey's test, Q_{count} (2,389) <Q_{table} (3,151) this shows that Ho is rejected, meaning that there is a significant difference between the learning outcomes of students with kinesthetic learning styles using learning media models. higher than students who have a kinesthetic learning style who learns using image learning media.

The fifth hypothesis

Two-way ANOVA calculation results, rejection of the null hypothesis; H_0: $\mu_{A1B2} \geq \mu_{A2B2}$ and Tukey's test calculation, Q_{count} (4,437)> Q_{table} (3,151) this shows that Ho is rejected, meaning that there is a significant difference between the basic physiology learning outcomes of students who have a kinesthetic learning style who learn to use learning media model higher than students who have a kinesthetic learning style who learns using image learning media. Acceptance H_1 ; $\mu_{A1B2} < \mu_{A2B2,}$ namely the results of learning basic physiology of students who have a visual learning style who learns using model learning media lower than students who have a visual learning style who learns using image learning media. Based on the calculation of the average value of the cognitive learning outcomes of students who have a visual learning style using model learning media (= 17.60) it is lower than the cognitive learning outcomes of students who have a visual learning style using image learning media (= 22.90) .

The sixth hypothesis

The results of Tukey's test calculations show acceptance of the null hypothesis, H_0: $\mu_{A1B1} \leq \mu_{A1B2}$ means rejection of the alternative hypothesis H_1: $\mu_{A1B1} > \mu_{A1B2}$. Thetest calculation *Tukey* shows that Q_{count} (0.341) <Q_{table} (3.151) this indicates that there is no significant difference between the cognitive learning outcomes of basic physiology science students who have a kinesthetic learning style. who learn to use learning media models with cognitive learning outcomes basic physiology students who have a visual learning style who learn to use model learning media. Based on the research results, it turns out that the basic physiology learning outcomes of students have a kinesthetic learning style who learn to use learning media models (= 18,10) higher than students who have a visual learning style who learn to use the learning media model (= 17.6).

Seventh hypothesis

The results of Tukey's test calculations, rejection of the null hypothesis H_0: $\mu_{A2B1} \geq \mu_{A2B2.}$

The Tukey test calculation shows $Qshows_{count}$ (6.485) <Q_{table} (3.151) thisthe learning outcomes of students who have a kinesthetic learning style. those who learn to use image learning media are lower than students who have visual learning styles who learn to use image learning media.

Based on the results of the calculation of the average value of the basic physiology learning outcomes of students who have a kinesthetic learning style those who learn to use image learning media (= 15,30) are lower than the basic physiology learning outcomes of students who have a kinesthetic learning style who learn to use the learning media model (= 18,10).

Table 4. Summary of Results Calculation Advanced Test (Test Tuckey)

Average Comparison	Average X_j	StatsTest (Qarithmetic)	Price criticism (Qtable)	Conclusion
A_1 - A_2	19.10	1,508	2,950	Acepted
B_1 - B_2	20,25	4,282	2,950	Rejected
A_1B_1 - A_2B_1	15,30	2,389	3,151	Acepted
A_1B_2 - A_2B_2	22.90	4.437	3.151	Rejected
A_1B_1 - A_1B_2	17.60	0.341	3151	Acepted
A_2B_1 - A_2B_2	22.90	6.485	3.151	Rejected

Conclusion:

a. There is no significant difference between the cognitive learning outcomes of students in the Basic Physiology course using learning media models and pictures

b. There is a significant difference between the cognitive learning outcomes of students in the Basic Physiology course which has a visual and kinesthetic learning style

. C. There is no significant difference between learning outcomes in the cognitive domain of students' basic physiology courses who are taught using model learning media and image learning media for students who have kinesthetic learning styles.

d. There is a significant difference between the cognitive learning outcomes of the basic physiology subjects of students who are taught using model learning media and image learning media for students who have a visual learning style.

e. There is no significant difference between student cognitive learning outcomes in the Basic Physiology course using model learning media for students who have kinesthetic and visual learning styles

There is a significant difference between student cognitive learning outcomes in the Basic Physiology course using image learning media for students who have kinesthetic and visual learning styles.

DISCUSSION

The results of testing the first hypothesis show acceptance of the null hypothesis and rejection of the alternative hypothesis that the learning outcomes of students using the basic physiology science learning model are lower and the same as those of students who use image learning media and there is no difference in cognitive learning outcomes of students using basic physiology learning media. Learning model with students' basic physiology cognitive learning outcomes using image learning media. This shows that students of PJKR STKIP Muhammadiyah Kuningan, in learning tend to be more attractive with image media rather than media models, this is in line with the results of research which states that the learning outcomes of students who have a kinesthetic learning style with an average cognitive value = 16 , 70 lower and the same as the learning outcomes of students who have learning styles with an average cognitive value = 20.25.

The results showed that students who had a visual learning style tended to be more successful than students who had a visual learning style, meaning that for PJKR STKIP Muhammadiyah students especially in Basic Physiology lectures, students tended to prefer learning by observing rather than learning by learning with demonstrations. According to Bobbi De Poter & Mike Hernacki (2019: 35) Visual learning style is learning through seeing,

looking, observing, and the like. More precisely, the visual learning style is learning by looking at something, whether in the form of a picture or diagram, show, demonstration or video. Students prefer to learn or receive information by viewing or reading. After seeing or reading, these people will find it easier and faster to digest and process new information received. They even prefer to read than digest information by hearing it directly. Visual learning style is a learning style in which ideas, concepts, data and other information are packaged in the form of pictures. Students with visual learning styles have a high interest in learning which presents pictures where they can see directly. This learning style puts forward the eye sense tools to respond to the information presented. This visual learning style places more emphasis on eye contact. To get information, students must look at what they are learning. Students who have this visual learning style need to pay attention to lessons when the lecturer explains or reads books.

The results of testing the second hypothesis, there are differences in the cognitive learning outcomes of students who have a kinesthetic learning style with students who have a visual learning style. Based on research data, the average value of student learning outcomes who have a kinesthetic learning style (= 16.70) is lower than that of students who have a visual learning style (= 20.25). As it is known that learning styles are a personal perspective on events that are seen and experienced. Therefore, the understanding, thoughts, and views of a student with another can be different, even though the two students grow up in the same conditions and environment, and receive the same treatment according to Bobbi De Poter & Mike Hernacki (2019: 28).

The results of testing the third hypothesis indicate that there is an influence of the interaction between learning media and learning styles on student learning outcomes in the cognitive domain of students in basic physiology courses. This is in accordance with the nature of students who have a kinesthetic learning style prefers to learn with the help of model learning media because this type of individual easily learns material in the form of writings, movements, and it is difficult to learn material in the form of sound or sight. In addition, learning is kinesthetic related to practice or learning experience directly. On the other hand, they have a visual learning style The tendency to learn is to use the help of image learning media because students who have a visual learning style will quickly learn the materials that are presented in writing, charts, graphs, pictures. Conversely, find it difficult to learn when faced with materials such as sound, or movement. So that the suitability of the learning media presented with the learning styles possessed by students will be able to improve optimal learning outcomes.

Learning outcomes in the cognitive realm of basic physiology of students who have a kinesthetic learning style who learn to use learning media models higher than students who have a kinesthetic learning style who learns using the image learning model. This is in accordance with students who have a kinesthetic learning style prefers to learn with the help of model learning media because this type of individual easily learns material in the form of writings, movements, and it is difficult to learn material in the form of sound or sight. In addition, learning is kinesthetic related to practice or learning experience directly.

There is a significant difference between learning outcomes in the cognitive domain of basic physiology, students who have a kinesthetic learning style who learn using learning media models. higher than students who have a kinesthetic learning style who learns using image learning media. This is because the learning media model is in accordance with the characteristics of students who have a kinesthetic learning style, in line with the opinion of Bobbi De Potter and Mick Hernacki (2019: 30) Educators need to recognize the learning styles of their students because not all students process information in learning in the same way . Therefore, educators need to know how the brain's working style is translated into learning styles. A person's learning style is a combination of how he absorbs and then organizes and processes information. Learning styles are not only aspects when dealing with information,

seeing, listening, writing and speaking but also aspects of partial, analytical, global or left-right brain information processing, another aspect is when responding to something to the learning environment (absorbed abstractly and concretely) .

Learning outcomes in the cognitive realm of basic physiology of students who have a kinesthetic learning style those who learn to use learning media models are higher than students who have a visual learning style who learn to use model learning media. This is because students who have a kinesthetic learning style are taught using learning media models that are more appropriate to reduce learning outcomes that were previously contained in their knowledge. In addition, students are also able to coordinate with friends in their groups. students are able to express their knowledge that supports the discussion process with group friends, so as to obtain high learning outcomes. However, if a group of students who have a visual learning style is given learning using media models it will have a negative effect. Students tend to be passive, unable to coordinate well in their learning.

Learning outcomes of basic physiology of students who have a kinesthetic learning style those who learn to use image learning media are lower than students who have visual learning styles who learn to use image learning media. This is because students who have a visual learning style taught with image learning media are more appropriate to reduce learning outcomes that were previously contained in their knowledge. In addition, students are also able to coordinate with friends in their groups. students are able to express their knowledge that supports the discussion process with group friends, so as to obtain high learning outcomes. However, if a group of students who have a kinesthetic learning style is given learning using image media, it will have a negative effect. Students tend to be passive, unable to coordinate well in their learning. Image learning media seeks to be able to construct an event or experience related to learning material in the form of objects by looking at it through a logical framework that transforms, organizes and interprets knowledge. Students who have a kinesthetic learning style will experience many obstacles, so that if given learning media pictures will be less precise and have a negative effect on student learning outcomes. Thus, students who have a kinesthetic learning style will be better taught with media models. in line with the opinion of Bobbi De Potter and Mick Hernacki (2019: 30) Educators need to recognize the learning styles of their students because not all students process information in the same way. Therefore, educators need to know how the brain's working style is translated into learning styles. A person's learning style is a combination of how he absorbs and then organizes and processes information. Learning styles are not only aspects when dealing with information, seeing, listening, writing and speaking but also aspects of partial, analytical, global or left-right brain information processing, another aspect is when responding to something to the learning environment (absorbed abstractly and concretely) .

CONCLUSION

1. The cognitive learning outcomes of the basic physiology subjects of students who use the model learning media are higher than students who use image learning media. Thus$_{Ho\ is}$ accepted and $H_{1\ is}$ rejected. This means that the first hypothesis which states that student learning outcomes using model learning media are higher than student learning outcomes using image learning media, is not tested in this study.
2. Cognitive learning outcomes in basic physiology courses of students who have a kinesthetic learning style higher than the cognitive realm learning outcomes in basic physiology courses of students who have a visual learning style. Thus$_{Ho\ is}$ rejected and $H_{1\ is}$ accepted. This means that the second hypothesis which states that student learning outcomes have

higher kinesthetic learning style of student learning outcomes that have a visual learning*style,* has been tested in this study.

3. There is an influence of the interaction between learning media and kinesthetic learning styles on student learning outcomes in the cognitive domain of students in basic physiology courses. Thus$_{Ho\ is}$ rejected and $H_{1\ is}$ accepted. This means that the third hypothesis there is an influence of the interaction between learning media and learning styles on student learning outcomes in the cognitive domain of students in the Basic Physiology course, has been tested in this study.
4. Cognitive learning outcomes in basic physiology courses of students who have a kinesthetic learning style who learn using learning media models higher than students who have a kinesthetic learning style who learns using the image learning model. Thus$_{Ho\ is}$ rejected and $H_{1\ is}$ accepted. This means that the fourth hypothesis states that the learning outcomes of the cognitive domain of students who have a kinesthetic learning style who learn using learning media models higher than the cognitive learning outcomes of students who have a kinesthetic learning style who learn using image learning media, has been tested in this study.
5. Learning outcomes in the cognitive domain of basic physiology courses of students who have a visual learning style who learns using a learning media model lower than students who have a visual learning style who learns using image learning media. Thus$_{Ho\ is}$ rejected and $H_{1\ is}$ accepted. This means the fifth hypothesis which states the learning outcomes of students in the cognitive domain who have a visual learning style who learns using model learning media lower than the cognitive learning outcomes of students who have a visual learning style who learns using image learning media, has been tested in this study.
6. Learning outcomes in the cognitive domain of the basic physiology subjects of students who have a kinesthetic learning style who learn to use model learning media higher than students who have a visual learning style who learn to use model learning media. Thus$_{Ho\ is}$ rejected and $H_{1\ is}$ accepted. This means the sixth hypothesis which states the learning outcomes of the cognitive domains of students who have a kinesthetic learning style who learn using model learning media higher than the cognitive learning outcomes of students who have a visual learning style who learns using learning media models, it has been tested in this study.
7. Cognitive learning outcomes in basic physiology courses of students who have a kinesthetic learning style those who learn to use image learning media are lower than students who have visual learning styles who learn to use image learning media. Thus$_{Ho\ is}$ rejected and $H_{1\ is}$ accepted. This means that the seventh hypothesis states that the cognitive learning outcomes of students who have a kinesthetic learning style who learn using image learning media lower than the cognitive learning outcomes of students who have a visual learning style learning using image learning media, has been tested in this study.

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