Volume 09 Nomor 01 Juni 2023 **P-ISSN : 2337-8298**
JURNAL KAJIAN ISLAM MODERN **E-ISSN : 2962-5858**
https://jurnal-inais.id/index.php/JKIM

The Influence Of *Guided Discovery Learning* Through *Hands-On Activity* And Pictures Media Toward The Concept Understanding Of Fungi Viewed Of Student's Science Learning Motivation

Lidya Banila[1*], Mieke Miarsyah[2], Diana Vivanti[3]
[1*]SMAN 1 Bojong Gede, Bogor, Indonesia
[2]Lecturer, Departement of Biology Education, Universitas Negeri Jakarta, Indonesia

* Corresponding author: lidyabanila@gmail.com
https://doi.org/10.56406/jkim.v9i01.196

ABSTRACT

With the low level of conceptual understanding of fungi, we need an appropriate learning model to overcome them. This research is aimed to determine the effect of guided discovery learning with hands-on activity toward the concept understanding of fungi, with the moderator variable being science learning motivation. The subject of this study are students of X IPA in SMAN 1 Bojonggede totaling 124 students on January–Maret 2018. The research method used a quasi-experiment with a 2 x 2 factorial design model. The instruments used were tests of science learning motivation and fungi comprehension tests. Samples were taken using simple random sampling. Analysis of data used two-way ANOVA. Sampling with simple random sampling. Data analysis using two-way ANOVA. The results of the analysis show that: (1) There is an influence of understanding the concept of fungi after guided discovery learning through hands-on activity (2) There is an influence of science learning motivation on understanding the concept of fungi. (3) There is an interaction of guided discovery learning through hands-on activity and science learning motivation towards the concept understanding of fungi.

Keywords: *guided discovery learning, hands-on activity, learning sains motivation, fungi concept understanding*

INTRODUCTION

Indonesia is a tropical country that has natural resources rich in biodiversity. One such biodiversity is mushrooms. Mushrooms (fungi) are commonly found in the surrounding environment. Mushrooms thrive in the rainy season because mushrooms like moist habitats. Fungi can occupy various types of habitats such as soil, wood, litter, animal feces, and parasites in other living things. Several types of mushrooms have been widely used by humans as a food ingredient and source of medicinal ingredients. Mushrooms that can be consumed by humans as food ingredients include ear mushrooms, oyster mushrooms, tempeh mushrooms, and various other types that have been developed. Ecologically, fungi function as decomposers. The existence of mushrooms with all their functions and benefits in the environment is very interesting to study and be used as one of the teaching materials in class X high school.

Knowledge of mushroom life in the environment around students can be an initial provision for students to understand mushrooms more deeply. Understanding fungi include: understanding morphological characteristics, way of life, ways of obtaining nutrition, reproduction, the role of the environment, and benefits for humans. To provide students with a good understanding of mushrooms from the concrete to the abstract, it is necessary to carry out investigative activities to develop curiosity through discoveries based on direct experience. Through scientific work by utilizing facts, to build new concepts, appropriate learning models and techniques are needed. Fun learning activities and student-centered learning, lead to higher learning outcomes compared to direct learning, Marjan et al (2014).

The fact is that mushroom learning still does not encourage students to build an understanding of mushroom concepts that are studied independently, this is supported by the average daily test scores of students who still score below the KKM. This shows the students'

low understanding of the mushroom concepts studied. Besides that, based on the results of the initial observations that have been made, the learning process still emphasizes the provision of direct knowledge by the teacher. Learners are taught only by memorizing concepts and are less involved in learning activities. As a result, students are less motivated and do not understand the concepts well studied. The solution to the problems described above requires a learning model that involves students being active in constructing knowledge. Biology learning which involves students actively in learning activities so that they can understand the function of learning well can be done using the guided discovery learning model through hands-on activity.

Discovery learning is a learning process that occurs when students are not presented with lessons in their final form, but students learn to organize their learning material through activities such as observing examples, then being encouraged to identify what they want to know, followed by searching for information and organizing and constructing what one wants to know and understand from the learning activities one has gone through, until new principles or concepts are found, in conclusion, Kemendikbud (2013). According to Hosnan (2014), some of the advantages of the discovery learning model include helping students to improve and enhance cognitive skills and processes.

Discovery learning is applied in learning according to Mayer (2004) there are 2 types, namely pure discovery and guided discovery. Techniques applied in guided discovery learning can be through mind-on activity or hands-on activity. Guided discovery learning activities using hands-on activity techniques will have a greater effect on students because students are actively involved in several activities and learning experiences directly by observing phenomena or manipulating objects to help the process of discovery and deep understanding, (Aprilia, 2016).

Guided discovery learning through hands-on activity is a discovery learning technique designed to involve students in digging up information and asking questions, students doing activities and discovering, collecting data, and analyzing and making their conclusions. Students are given the freedom to construct thoughts and findings while carrying out activities so that students do it themselves without burden, with fun, and with high motivation. (Khoiliyah, 2008).

Guided discovery learning through hands-on activity involves activities and direct experience with natural phenomena or learning experiences that actively involve students in manipulating objects to gain knowledge or understanding. Hands-on activity is centered on manipulative activities and practical activities used. Guided discovery learning through hands-on activity is an experimental activity for students to discover knowledge directly through their own experiences, constructing understanding and knowledge (Daniah, 2012). Aprilia (2016) argues that the hands-on activity-assisted learning model has several advantages, including increasing learning activities, learning motivation, and increasing students' enjoyment in learning. Hands-on activity-assisted learning can improve skills and expertise in communication, ways of thinking, and making decisions on their own based on direct discoveries and experiments as well as increasing creativity and comprehension or perception Guided Discovery learning through hands-on activity in increasing students' understanding of the mushroom concept is inseparable from external and internal factors. External factors come from outside the environment of students such as teachers, facilities, and the learning climate created by the teacher. Internal factors come from within students including, physical condition, interest, and motivation. Motivation is the initial provision that students must have before participating in learning activities.

Learning motivation is a person's desire to activate, move, channel, and direct individual attitudes and behavior to learn. Mulyadi (2012) states that motivation to learn is to arouse and provide encouragement that causes individuals to carry out learning actions. The motivation

possessed by students in each learning activity plays a very important role in improving learning outcomes. Students who have high motivation in learning enable them to obtain high learning outcomes, Hamalik (2008). While the motivation to learn science is the encouragement or desire of students to take part in science learning by carrying out a series of science learning activities, such as participating in the process of forming new concepts, critical thinking processes, and performing science process skills, to participate in science learning. There are six indicators of motivation possessed by students in participating in science learning, namely: self-efficacy, active learning strategies, science learning values, performance goals, achievement goals, and stimulation from the environment. Likewise, students' learning motivation in participating in science learning activities as a whole can affect the science learning outcomes that will be obtained.

The use of learning models that are under the characteristics of the teaching materials to be studied and the characteristics of students will determine the achievement of the expected competencies, and have a final impact on student learning outcomes. Therefore the teacher needs to choose a learning model that is appropriate to the material to be delivered so that students are motivated to participate in learning and have the ability to construct their understanding of what is being studied independently. Referring to the learning difficulties experienced by students when learning concepts in the kingdom fungi, guided discovery learning through hands-on activity and high motivation in studying science is expected to increase students' understanding of the concepts in the fungi material.

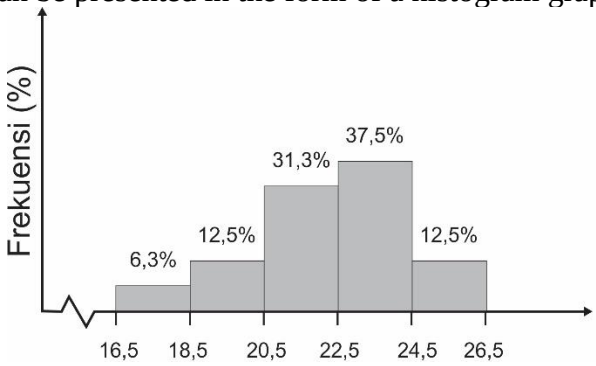
METHOD

The method used is a quasi-experimental method with the experimental design used is the posttest-control design (Creswell, 2014). In this design, the experimental class and control class both carried out the post-test, only the experimental class was given treatment using guided discovery learning through hands-on activity, and the control class used guided discovery learning through image media.

RESULT AND DISCUSSION

1) Data on students' understanding scores on Fungi (Mushrooms) material with the guided discovery learning model through hands-on activity and high motivation to learn science (A1B1)

Students' understanding of the kingdom fungi material who studied with the guided discovery learning model through hands-on activity and high learning motivation obtained the highest score of 25 and the lowest score of 18. The average calculation results were 22.18, with a standard deviation of 2.19. The frequency distribution of students' conceptual understanding scores using the guided discovery learning model through hands-on activities with high learning motivation can be presented in the form of a histogram graph in Figure 1 below:



Skor Pemahaman konsep fungi

Figure 1. Scores of understanding the concept of fungibility in students using guided discovery earning through hands on activity with high motivation to learn science

2. Data on students' understanding scores on Fungi (Mushrooms) material with the guided discovery learning model through hands-on activity and low motivation to learn science (A1B2)

Students' understanding of the Kingdom Fungi material who studied with the guided discovery learning model through hands-on activity and low learning motivation obtained the highest score of 25 and the lowest score of 18. The average calculation results were 21.56, with a standard deviation of 1.96. Distribution of frequency scores Understanding the concept of students who use the guided discovery learning model through hands-on activity with low learning motivation can be presented in the form of a histogram graph in Figure 2. as follows:

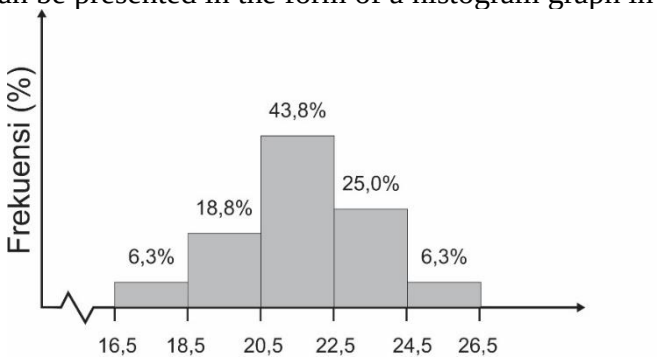


Figure 2. Students' understanding of the concept of kingdom fungi using guided discovery learning through hands-on activity and low motivation to learn science

3. Data on student understanding scores on Fungi (Mushroom) material with guided discovery learning models through image media and high science learning motivation (A2B1)

Students' understanding of the material kingdom fungi who learn with guided discovery learning models through media images and high learning motivation obtained the highest score of 25 and the lowest score of 15. The average calculation result is 20.75, with a standard deviation of 2.97. Frequency distribution of students' conceptual understanding scores using the guided discovery learning model through media images. with low learning, motivation can be presented in the form of a histogram graph in Figure 3. The following:

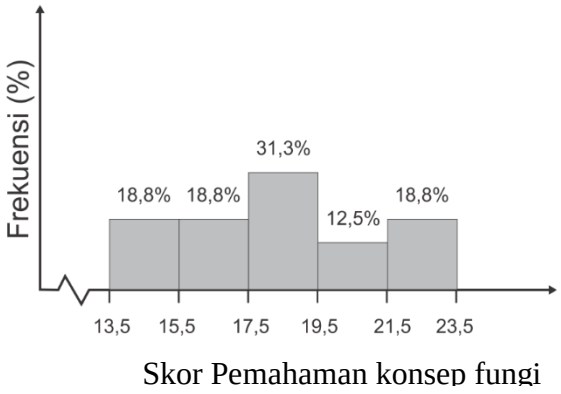


Figure 3. The score of students' understanding of the concept of function using Guided discovery learning through the media of images and low motivation to learn science

4. Data on student understanding scores on Fungi (Mushrooms) material with guided discovery learning models through media images and low motivation to learn science (A2B2)

Students' understanding of the material kingdom fungi who studied with the guided discovery learning model through media images and low learning motivation obtained the highest score of 25 and the lowest score of 15. The average calculation results were 18.43, with a standard deviation of 2.60. The frequency distribution of students' conceptual understanding scores using the guided discovery learning model through media images with low learning motivation can be presented in the form of a histogram graph in Figure 4 below:

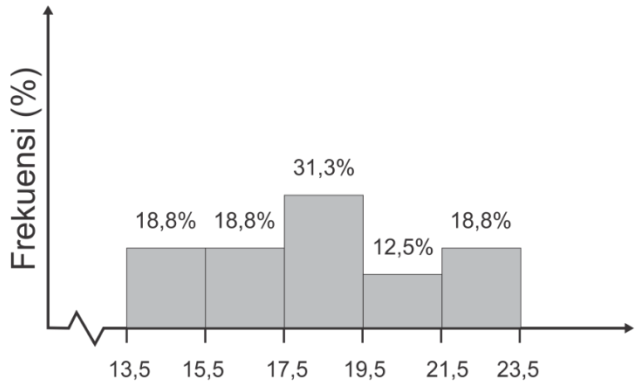


Figure 4. Conceptual understanding scores of students who use Guided Discovery learning through image media and low motivation to learn science

Prerequisite Analysis Test

Testing the requirements carried out is the test for normality and homogeneity of the data. The explanation regarding the prerequisite test for the research data sample is as follows:

1. Normality Test

The data in this study contained 2 data, namely data on motivation to learn science and data on understanding the mushroom concept score. The two data are divided into 4 groups of data. For the learning outcomes of students in class X IPA at SMA Negeri 1 Bojonggede both the control class (using the guided discovery learning model through media images) and the experiment (using the guided discovery learning model through hands-on activity) with each posttest score totaling 124 data. In this study using the Kolmogorov-Smirnov test it can be seen that the p-value is greater than the alpha value of 0.05. These results indicate that H0 is accepted, meaning that the data is normally distributed.

The calculation results can be seen in the following table:

Table 1. Calculation results for the normality test for data groups A1B1, A1B2, A2B1, A2B2

One-Sample Kolmogorov-Smirnov Test

	A1B1	A1B2	A2B1	A2B2
N	16	16	16	16
Kolmogorov-Smirnov Z	.681	.951	.901	.592
Asymp. Sig. (2-tailed)	.743	.327	.392	.875
Status	Normal	Normal	Normal	Normal

The results of the normality test in each research group for the four data groups have a significance value of > α = 0.05 so it can be concluded that the four data groups are normally distributed.

2. Homogeneity Test

To test the homogeneity of learning outcomes in class X IPA students at SMA Negeri 1 Bojonggede, both the control class (using the guided discovery learning model through picture media) and the experiment (using the guided discovery learning model through hands-on activity) with each posttest value.

The results of the data homogeneity test show that the value of p = 0.511 where this value is greater than the alpha value of 0.05 (p> 0.05). These results indicate that Ho is accepted. So it was concluded that the four groups of data tested came from samples with homogeneous data variances. The calculation results can be seen in the following table:

Table 2. Homogeneity test on four groups of data on understanding the concept of the group variance function

Levene Statistic	df1	df2	Sig.
.777	3	60	.511

Test the hypothesis of learning outcomes using the guided discovery learning model through hands-on activity and the guided discovery learning model through image media and motivation to learn science using a 2-way ANOVA test (using SPSS) which can be seen in the table below:

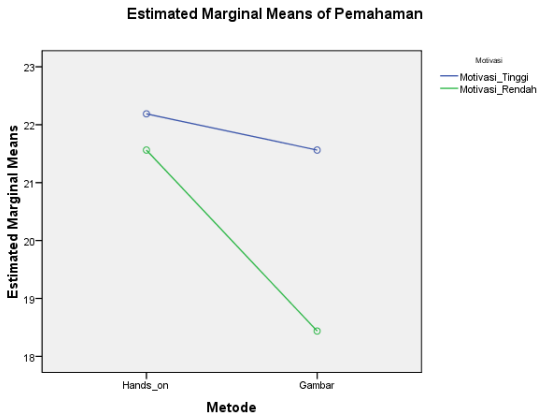
Table 2. Two-Way Anova Hypothesis Test Results

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	137.500[a]	3	45.833	9.475	.000
Intercept	28056.250	1	28056.250	5.8003	.000
Metode	56.250	1	56.250	11.628	.001
Motivasi	56.250	1	56.250	11.628	.001
Metode *Motivasi	25.000	1	25.000	5.168	.027
Error	290.250	60	4.838		
Total	28484.000	64			
Corrected Total	427.750	63			

a. R Squared = .321 (Adjusted R Squared = .288)

Based on data analysis, it can be seen that the results of hypothesis testing are as follows:

1. There is an influence of the guided discovery learning model through hands-on activity on students' understanding of the mushroom concept. This is shown from the calculation results that the p-value for understanding the concept using the guided discovery learning model through hands-on activity and guided discovery learning through media images is p=0.001. where the value of p <0.05 means rejecting H0 which means that there are differences in understanding the concept of Fungi between students who use the guided learning model through hands-on activity and guided discovery learning through media images
2. There is an influence of motivation to learn science on understanding the concept of mushrooms. It is shown from the calculation results that the p-value for learning outcomes in students with high critical thinking skills and low critical thinking skills is p=0.001. Where the value of p <0.05 means rejecting H0 which indicates that there are differences in understanding the concept of function between students with high motivation to learn science and students who have low motivation to learn science.
3. There is an interaction of discovery learning models through hands-on activity and motivation to learn science toward understanding the concept of function in students. This is shown from the calculation results obtained that the p-value for the value of interaction between learning models and critical thinking skills is 0.027 p-value <0.05 means rejecting H0 which indicates that there is an interaction between learning models and motivation to learn science. Furthermore, the whole is presented in the form of a chart as follows:



In the chart above it can be seen that students who have high and low motivation who get learning with guided discovery learning through hands-on activity gain a higher understanding of the concept of function when compared to students who get learning with guided discovery learning through picture media. The average order of understanding of the concept of students who are motivated to learn science is low in classes that receive guided discovery learning through media images, followed by students who are motivated to learn low in classes that receive guided discovery learning through a hands-on activity. The interaction can be seen from the difference in the mean increase in the understanding of the concept of fungibility of students who get guided discovery learning through hands-on activities and students who get guided discovery learning through media images in the category of high motivation to learn science in contrast to students who have low motivation to learn science.

DISCUSSION

1. The effect of the GDL learning model through hands-on activity and GDL through image media on understanding the concept of function

Based on the analysis of Table 1 regarding GDL through hands-on activity and GDL through image media. The results of understanding the function concept using the GDL model through hands-on activity obtained the highest score of 25 and the lowest score of 18, with a maximum score of 30. Meanwhile the results of understanding the function concept using the GDL model through images obtained the highest score of 25 and the lowest score of 15. Both

models have a higher understanding of the function concept of students using the GDL model through hands-on activity compared to students who learn using the GDL model through image media. This is also supported by the results of hypothesis testing which shows that Fcount 11.628 > Ftable 3.33, meaning that the learning model, both guided discovery learning models through hands-on activity and guided discovery learning through media images, influences the understanding of the concept of function in participants. educate.

The guided discovery learning model has enormous potential to create a more meaningful learning experience for students in concept discovery. In the guided discovery learning process, students experience a mental process to assimilate a concept and principle. The mental process in question is the activity of observing, classifying, making conjectures, explaining, measuring, and making conclusions.

The guided discovery learning model has a close relationship with the understanding process. Understanding is a mental construction, an abstraction made by the human mind to reason about the many different bits of knowledge, besides that the entrance to understanding is essential questions, (Grant W and Jay. M, 2012). This is under the first syntax in the guided discovery learning model, namely stimulation, where the teacher gives questions that are relevant to everyday life in the student's environment, thereby stimulating students to think and encouraging exploration, and directing students to understand what will become learning topics.

Understanding of translating develops when students make observations of the observed mushroom objects and explore information from various sources and discussions. In observation, exploration, and discussion activities students try to translate the information obtained or give meaning to the information to provide answers to the problems given. These activities are contained in the syntax of the guided discovery learning model, namely problem statements, data collection syntax for exploratory activities through hands-on activities, and data processing syntax through group discussion activities. Interpretive understanding develops when students interpret the information obtained when explaining the meaning of a statement that takes place in the syntax of data collection and data processing. Likewise in syntax verification, through presentations and discussions, students will explain in detail the meaning or meaning of a concept or principle in mushrooms. Understanding of generalizing and inferring develops when students get practicum to predict the phenomena encountered, for example when practicing growing bread molds with various kinds of humidity and when observing the phenomenon of whether yeast is a living thing. Thus the syntax of guided discovery learning has provided a meaningful learning experience for students in understanding the mushroom concepts being studied. Relevant research results have been carried out by Widiadnyana., Sadia., & Suastra. (2014) and it was concluded that there were differences in understanding the concept of science between students who studied using the discovery learning model and students who studied using the direct teaching model.

Guided discovery learning through hands-on activity will emphasize students to be actively involved in learning activities directly with the guidance of the teacher. Hands-on activities are carried out in the form of real activities such as: identifying, cutting, cutting, assembling, or assembling objects so that a certain pattern is formed. With hands-on activities carried out by students during learning activities a deep appreciation and learning experience will be formed for students in establishing a meaning from a concept that is being studied.

The application of guided discovery learning through hands-on activity involves a lot of physical activity that directly involves the hands and senses of students, such as the senses of sight, sense of hearing, sense of taste, and sense of smell in information-seeking activities, questioning activities, activities of collecting and analyzing data to make conclusions. Students

are given the freedom to construct thoughts and findings while carrying out activities so that students carry out learning activities without the

burden and are fun to achieve better learning goals.

This is under the results of research conducted by In'am (2017), which states that the discovery learning model through hands-on activity can encourage student learning activities and encourage learning goals to be very good, (In'am, 2017). The results of other studies strengthen the effect of guided discovery learning which is also carried out by Balim (2009) states that guided discovery learning affects students' perception scores, learner skills learning, academic score requests, knowledge retention, and cognitive and affective levels with sufficient significance tall. The benefits that can be obtained through hands-on activity-based learning are increasing interest, motivation, strengthening memory, overcoming learning difficulties, avoiding misunderstandings, getting feedback from students and the most important thing is connecting the concrete and the abstract, (Holstermann, 2010). This is under the characteristics of mushroom learning which studies a lot of abstract concepts, thus requiring more concrete techniques and media to make it easier for students to understand the concepts being taught.

Some of the advantages of the guided discovery learning model include helping students to improve and enhance cognitive skills and processes (Hosnan, 2014). Discovery efforts made by students are key in this process and are supported by how students learn. Learning with guided discovery learning creates a feeling of pleasure in students, because of the growth of hidden feelings and the desire to succeed. In addition, the hands-on activities-based learning model will increase cognitive learning achievement. The application of hands-on learning activities to students is required to make the subject matter more concrete and this will make it easier for students to learn the ongoing subject matter (Korwin, AR & Ronald, J, 1990).

Rahmawati (2012) added that with guided discovery learning through hands-on activity, students will gain experience and new concepts in learning. In addition to proving facts and concepts, hands-on activity also encourages students' curiosity in more depth so that it tends to arouse students to conduct research to gain observations and experience in the scientific process. Guided discovery learning through hands-on activity is very relevant to constructivism learning theory which states that students must be active in activities, active in thinking, constructing concepts, and giving meaning to the things being studied. Given this theory, students are considered to have initial abilities before learning something, so the role of the teacher in the learning process only helps the process of building new knowledge among students. Constructivists also state that humans can know something through their senses, by interacting with objects and their environment through the process of seeing, hearing, touching, smelling, and feeling people can know something. This also means that it is in line with learning activities based on hands-on activities.

In contrast to the guided discovery learning model through pictures, this model is relatively simpler and learning is less challenging for students to further explore their abilities in the inquiry process. The use of this image is structured and designed so that students can analyze the image in a form of a brief description of what is in it. broaden their understanding of concepts deeper and more complex, encouraging them to build concepts through the activity of observing images. According to Joyce B, Weil M & Calhoun E (2009), the weakness of image media is that not all material can be presented in the form of images. Images as visual media are media that only rely on the sense of sight, namely the ability to analyze and identify examples of images in learning according to basic competencies. However, media images have concrete properties and can overcome the limitations of space and time. Because not all objects or objects can be brought into the class. Through the use of media images, the attention of students will increase. Students who see pictures will more easily understand the concept of

abstract functions. Students who learn by looking at pictures will remember what they see and can later be used again when acquiring new knowledge and when solving problems. This is reinforced by Edgar Dale's statement in Subramony (2003), that students who learn by looking at pictures or using their sense of sight will benefit by 30%. Through the media of images, it is easier for students to remember compared to just reading from a book or listening to explanations to understand a concept. Visual media still allows for the interaction of students with their environment, it can help instill complex basic concepts into more concrete ones

Based on the results of the analysis of the implementation of learning, it can be explained that the learning process activities are going well under the learning sequence in both the experimental class and the control class. Classes that use the guided discovery learning model through media images are also good in the learning process. This can be seen in the implementation of learning (appendix 4). The results of Yuhernis, Lestari R, & Apniyanti E's research (2015) state that the discovery learning model with the help of images can help students respond to the lessons presented, and help each other in each group during learning.

1. The effect of motivation to learn science on understanding the concept of function

Based on Table 1, the results obtained related to the influence of motivation to learn science on understanding the concept of fungi show that the motivation to learn the science of students who have high learning motivation or those who have low learning motivation affects understanding the concept of fungi. Motivation to learn is encouragement from within students to do learning. In general, students who have high motivation to learn science show better learning outcomes compared to the learning outcomes of students who have low motivation to learn science. Students who have high motivation to learn science, when learning takes place tend to show greater enthusiasm for learning and greater self-confidence compared to students who have low learning motivation. This is in line with research conducted by Roissatun S.Z., Muttoharo & Sudibyo E (2015) which states that students who have high learning motivation are higher, and higher learning outcomes will be obtained. Vice versa, the lower the learning motivation, the lower the learning outcomes will be. In addition, students who have high learning motivation will have strategies in learning to achieve goals, will participate in learning activities well, try to fulfill learning tasks, and make efforts to get achievements or awards from the learning activities they do. Thus it will produce a better understanding of learning. On the other hand, students who have low learning motivation will not try to participate in learning activities properly. there is an effort to achieve achievement in participating in learning activities. As a result, the understanding gained by students about the mushroom concept being studied is low. This is relevant to the research results of Ames C & Archer J (1988), which state that learning strategies and motivational processes that take place in students will affect the achievement of learning objectives**.**

The group of students who have high motivation to learn science shows an average score of understanding that is higher than the group of students who have low motivation to learn science. This is because students who have high learning motivation have high encouragement and confidence in their abilities to be able to fulfill their learning tasks, as seen from the achievement of understanding scores obtained by students. Uncertainty arises when we experience something new, surprising, inappropriate, or complex. This will cause high stimulation in the central nervous system. The human response when facing uncertainty is called curiosity. Curiosity will direct humans to behaviors that try to reduce uncertainty (Gagne, 1985).

In science learning, when the teacher demonstrates an experiment that produces unexpected results, this will create a conceptual conflict within the students, and this will motivate them to understand why the experimental results are different from what they think.

Thus, the state of uncertainty created by the teacher has aroused the curiosity of students, and students will be motivated to reduce this uncertainty in themselves. It can be concluded that curiosity can increase motivation. Students who have high learning motivation will have a higher curiosity, so the desire to explore is also high, to achieve learning goals. In addition, it is also supported by the results of hypothesis testing showing that Fcount 11.628 > Ftable 3.33, meaning that high and low learning motivation influences understanding kingdom fungi. This can happen because learning motivation will be related to the achievement of various learning outcomes including learning outcomes in the form of understanding concepts.

2. The interaction of the guided discovery learning model through hands-on activity in terms of motivation to learn science towards understanding the concept of fungi

Test the hypothesis in the interaction part of the guided discovery learning model through hands-on activity in terms of motivation to learn science on understanding kingdom fungi showing Fcount 5.17 > Ftable 3.33, meaning that there is the interaction between learning model and motivation to learn science on understanding kingdom fungi in participants educate. In the learning process, it is necessary to understand a competency goal that must be achieved. The sense is that the higher the motivation to learn science, the greater the opportunity for students to meet learning demands. Students who have high motivation to learn science can manage their learning so that they can understand the concepts given by the teacher well in the material of functions.

High motivation to learn science provides better learning outcomes in understanding a teaching material in depth. This is in line with research conducted by Imawan (2015) which revealed that in the teaching and learning process using the guided discovery learning model through hands-on activity theoretically can help the development of students in developing the knowledge and skills they have. So that there is an interaction between the guided discovery learning model through hands-on activity and motivation to learn science on students' understanding of the concept of function.

Based on Table 1. the average score for understanding the concept of fungi, it can be concluded that students who have high motivation to learn science can understand the concept of fungi presented in the learning process through the guided discovery learning model through a hands-on activity. The description above shows that the application of the guided discovery learning model through hands-on activity and high motivation to learn science can help students gain a good understanding of the concept of function as a result of student learning.

CONCLUSION

Based on the results of the discussion and analysis of the data, conclusions can be drawn, namely:

1. The guided discovery learning model through hands-on activity influences students' understanding of the concept of function.
2. Students' motivation to learn science influences the understanding of the concept of fungi
3. The guided discovery learning model through hands-on activity interacts with the motivation to learn science and influences students' understanding of the concept of function

REFERENCES

Anderson, L.W. and Krathwohl, D. (Eds.). 2001. *TaX IPAonomy for Learning, Teaching, and Assessing: A Revision of Bloom's TaX IPAonomy of Educational Objectives. New York: Longman.*

Anderson, L.W., & Krathwohl, D.R. (2001). *A Taxonomy for Learning, Teaching, and Assesing;A revision of Bloom's Taxonomy of Education Objectives*. New York: Addison Wesley Lonman Inc.

Aprilia., & Susilo, M.J. *(2016). Pembelajaran* IPA Biologi *Berbasis* Scientific Approach Di SMP Muhammadiyah 2 Depok Sleman Penggunaan Lembar Kegiatan Siswa (*Hand on Activity*) dalam *Pembelajaran* Biologi. *Prosiding Seminar Nasional XII Biologi*, *13*(1).

Arikunto, S. (2009). *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.

Albalate, A. R., Larcia, H. D. S., Jaen, J. A. R., Pangan, K. R. O., & Garing, A. G. (2018). Students' Motivation Towards Science Learning (Smtsl) Of Stem Students Of University Of Batangas, Lipa City. *International Journal Of Social Sciences, 3*(3).

Arikunto, S. (2010). *Prosedur Penelitian: Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.

Balim, A.G. (2009). The Effects of Discovery Learning on Students Success and Inquiry Learning Skills. *Eurasian Journal of Educational Research*, *3*(5).

Borthick, F., Jones, & Donald, R. (2000). Motivation for Collaborative Online Learning Invention and Its Application in Information Systems Security Course. *Issues inAccounting Education*, *15*(2), 181-210.

Campbell, N.A., Reece, J.B., & Mitchell, L.G. (2003). *Biologi Jilid 2 Edisi Kelima*. Jakarta: Penerbit Erlangga.

Campbell, N.A., Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V., Jackson, R.B., & Wulandari, D.T. (2010). *Biologi, Edisi kedelapan jilid 2*. Jakarta. Erlangga

Cohen, M.T. (2008). The Effect of Direct Instructions Versus Discovery Learning on the Understanding of Science Lessons by Second Grade Students. *Journal of Northeastern Educational Research Associatio*n, 30 (1), 1-28.

Daniah, N. (2012). Pembelajaran Biologi Berbasis Hands on Activity untuk Meningkatkan Keterampilan Generik Sains Siswa Pada Materi Ekosistem di SMA Negeri 1 Dukupuntang. Tesis (dipublikasikan). Magister Pendidikan Biologi IAIN Syech Nurjati, Cirebon.

Klahrland, D., & Nigam, M. (2004). The Equivalence of Learning Paths in Early Science Instruction Effects of Direct Instruction and Discovery Learning. *American Psychological Society*, *15*(10).

Hamalik, O. (2012). *Psikologi Belajar dan Mengajar*. Bandung: Penerbit Sinar Baru Algensindo.

Hosnan, M. (2014). *Pendekatan Saintifik dan Kontekstual dalam Pembelajaran Abad 21*. Bogor*:* PT. Ghalia Indonesia.

Huitt. (2001). *Motivation to Learn: An Overview. Educational Pshycology Interactive*. Valdosta: Valdosta State University

In'am, A., & Hajar,S. (2017). Learning Geometry through Discovery Learning Using a Scientific Approach. International Journal of Instruction, 1(10), 55-70.

Jennifer, R., & Nichols. (2013). *Essential of 21st Century Learning* (online). Retrieved from https://www.teachthought.com/learning/4-essential-rules-of-21st-century-learning/.

Kemendikbud. (2013). Permendikbud No.65 tentang Standar Proses Pendidikan Dasar dan Menengah. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Kemendikbud. (2013). Permendikbud No.81 A tentang Implementasi kurikulum 2013. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Kementerian. (2014). *Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia nomor 103 tahun 2014 tentang Kurikulum 2013 Sekolah Menengah Atas/Madrasah Aliyah. Jakarta: Kementerian Pendidikan dan Kebudayaan.*

Kirsner, S., Sweller, J., & Clark, R.E. (2006). Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching. *Educational Psychologist*, *4*(2), 75-86.

Kurniasih, & Sani. (2014). *Implementasi Kurikulum 2013 Konsep dan Penerapan*. Surabaya: Kata Pena.

Lestari, H., Banila, L., & Siskandar, R. (2019). Kemandirian Belajar Melalui Pembelajaran Berbasis Stem Improving Student ' S Science Literacy Competencies Based on Learning Independence With Stem Learning. *Biodidaktika*, *14*(2), 18–23.

Lestari, H., Putriani, S., & Rahmawati, I. (2022). Kontribusi Gaya Belajar Terhadap Minat Belajar Siswa Selama Masa Pandemi Covid-19 Di Madrasah Ibtidaiyah Anwarul Hidayah. *Kajian Islam Modern*, *08*(02), 2–9. https://doi.org/https://doi.org/10.56406/jurnalkajianislammodern.v8i02.111

Lestari, H., & Siskandar, R. (2020). Literasi Sains Siswa Melalui Penerapan Model Pembelajaran Blended Learning Dengan Blog. *NATURALISTIC: Jurnal Kajian Penelitian Pendidikan*, *4*(2), 597–604. https://journal.umtas.ac.id/index.php/naturalistic/article/view/769

Marjan, J., Arnyana, & Setiawan, I.G.A.N. (2014). Pengaruh pembelajaran saintifik terhadap Hasil belajar Biologi dan Keterampilan proses Sains Siswa MA Mualimat NW, Lombok. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha*, *4*(1), 1-12.

Markaban. (2008). Model Penemuan Terbimbing pada Pembelajaran Matematika SMK. Paket Fasilitasi Pemberdayaan KKG/MGMP Matematika. Yogyakarta P4TK Matematika (online). Retrived fromhttp://p4tkmatematika.org/fasilitasi/38-penemuan-terbimbing-matematika-smk.pdf.

Mayer, R. (2004). Should There Be A Three-Strikes Rule Against Pure Discovery Learning? The Case For Guided Methods Of Instruction. *American Psychological Association*, *59*(1):14-9.

Munawarah, Maryono., & Ramdani. (2015). Penerapan Model Pembelajaran Tipe STAD untuk Meningkatkan Motivasi dan Hasil Belajar Siswa Kelas XIS-3 SMAN 3 Lau Maros. *Prosiding Simposium Nasional Inovasi dan Pembelajaran Sains*, 1(1): 433-436.

Pradita, & Ayu, A.R. (2013). Pengaruh Model Pembelajaran Kontekstual Berbasis Hands On Activity Terhadap Hasil Belajar. *E-Journal Universitas Malang.* Retrieved from http://library.um.ac.id/free-contents/download/pub/pub .php/63450.pdf.

Pratiwi, D.a., Mariati, S., Suharno., & Bambang. (2006*). Biologi SMA Kelas 1*. Jakarta:Erlangga.

Rahman, R., & Maarif, S. (2014). Pengaruh Penggunaan Metode Discovery Learning terhadap Kemampuan Anologi Matematis Siswa SMK Al-Ikhsan Pamarican Kabupaten Ciamis Jawa Barat. *Jurnal Ilmiah Program Studi Matematika STKIP Siliwangi Bandung*, *3*(1), 33-58.

Rahmawati. (2012). Pengembangan Perangkat Pembelajaran dengan Metode Pembelajaran Penemuan Terbimbing (*Guided Discovery*) untuk Melatih Keterampilan Berpikir Kritis Siswa SMP. Tesis Magister Pendidikan, Universitas Negeri Surabaya (di publikasikan).

Rahmawati, I., Lestari, H., & Nurhikmah, H. (2022). Pengaruh Efikasi Diri Terhadap Kreatifitas Kerja Guru Pegawai Negeri Sipil (PNS) Sekolah Dasar Negeri Se-Kecamatan Cibungbulang. *Education Management Reviews Anda Research*, *1*(2), 60–67. https://doi.org/10.56406/jpe.v1i2.6

Ramdhani, M.R., Usodo, B., & Subanti, S. (2017). Discovery Learning with Scientific Approach on Geometry. *ICMScE*, 895(1): 8-17.

Sani, & Abdullah, S. (2014). *Pembelajaran Saintifik Untuk Implementasi Kurikulum 2013*. Jakarta, Bumi Aksara.

Sardiman, A.M. (2008). *Interaksi dan Motivasi Belajar Mengajar*. Jakarta: Raja Grafindo Persada.

Schooley, J. (1997). *Introduction to Botany*. New York: Delmar Publisher.

Schunk, & Dale, H. (2012). *Learning Theories an Educational Theories.* US: Pearson.

Sudjana, N. (2012). *Penilaian Hasil Proses Belajar Mengajar*. Bandung: Remaja Rosdakraya.

Sukmadinata, & Syaodih, N. (2003). Landasan Proses Pendidikan. Bandung: Remaja Rosdakarya.

Sunismi. N. (2012). Pengembangan Bahan Pembelajaran Geometri dan Pengukuran Model Penemuan Terbimbing Berbantuan Komputer untuk Memperkuat Konsepsi Siswa. *Cakrawala pendidikan, 31*(2).

Suwangsih, & Tiurlina. (2006). *Model Pembelajaran Matematika*. Bandung: UPI-PRESS.

Syah, M. (2010). *Psikologi Pendidikan*. Bandung: PT Remaja Rosdakarya.

Trianto. (2009). *Mendesain Model Pembelajaran Inovatif- Progresif.* Jakarta: Kencana Prenada Media Group.

Tuan, H.L., Chin, C.C., & Shieh, S.H. (2005). The Development of a Questionnaire to Measure Students' Motivation towards Science Learning. *International Journal of Science Education, 27*(6), 639–654.

Uno, H.B. (2009). *Teori Motivasi dan Pengukurannya*. Jakarta: Bumi Aksara.

Wardoyo, S. M. (2013). *Pembelajaran Konstruktivisme*. Bandung: CV Alfabeta.

Widiadnyana., Sadia., & Suastra. (2014). Pengaruh Model Discovery Learning Terhadap Pemahaman Konsep IPA dan Sikap Ilmiah Siswa SMP. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi IPA, 4*(1).

Winkel, W. S. (2009). *Psikologi Pengajaran*. Yogyakarta: Media Abadi.

Yang, F. E., Liao, C. C., Ching, E., Chang, T., & Chan, T.W. (2010). The Effectiveness of Inductive Discovery Learning in 1: 1 Mathematics Classroom. *Proceedings of the 18th International Conference on Computers in Education*, *2*(1), 743-747.

Yuhernis, Lestari R, Apniyanti E. (2015). Pengaruh Model Discovery Learning Disertai Media Gambar Terhadap Hasil Belajar Biologi siswa SMK Negeri 1 Rambah Tahun Pembelajaran.Tesis (dipublikasikan). Program Studi Pendidikan Biologi, FKIP, Universitas Pasir Pengaraian.