



THE EFFECT OF GUIDED AND PURE DISCOVERY MODELS ON CONCEPTUAL UNDERSTANDING OF HUMAN EXCRETORY SYSTEM IN TERMS OF SELF REGULATED LEARNING IN JUNIOR HIGH SCHOOL

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ABSTRACT

The quality of human resources in the 21st century requires education to create human resources who are able to develop skills, especially the ability to think. Thinking skills are needed so that students can analyze problems, and be able to solve problems in everyday life. The thinking ability of students can develop if they have good conceptual understanding, but learning activities at school still do not maximize students' thinking abilities so that the level of students conceptual understanding is still relatively low. This study aims to analyze the effect of guided discovery and pure discovery models on students' conceptual understanding in the excretory system material in terms of self-regulated learning. This study used a quasi-experimental method with a 2X2 factorial design pretest posttest control group design. The research sample consisted of 64 students, and the instruments used in this study consisted of multiple-choice tests to measure conceptual understanding and non-tests in the form of self-regulated learning questionnaires to measure students' level of self-regulation. Data analysis used Two Way Anova with a significance value of $0.000 < 0.05$ so that H_0 was rejected. The conclusion from this study is that there is an influence of guided discovery and independent discovery models on the mastery of the concept of the human excretory system in terms of self-regulated learning in students.

Keywords: Guided Discovery, Pure Discovery, Conceptual Understanding, Self-Regulated Learning, Human Excretory System

INTRODUCTION

Education has an important role, one of which is in improving the quality of human resources, the quality of human resources in the 21st century requires education to create human resources who are able to develop skills, especially the ability to think (Mufidah & Ariyadi, 2017). Thinking skills are needed so that students can analyze problems, and be able to solve problems in everyday life. Students' thinking skills can develop if students have good conceptual understanding, this is in accordance with expert statements where the ability to conceptual understanding is very important because concepts are the basis for thinking (Dahar, 2011).

Conceptual understanding is the ability to connect newly acquired knowledge with previous knowledge (Srikoon et al., 2018; Taslidere & Eryilmaz, 2012). conceptual understanding is also defined as a student's effort to capture and transfer back certain learning material information that can be used in solving problems, analyzing and interpreting certain events (Silaban, 2014). The ability to conceptual understanding is needed in the world of work and everyday life because it can be used as a tool to sort out what is good and what is bad in everything we do (Paul & Elder, 2002). In addition, the ability to conceptual understanding also has an important role for students where with good conceptual understanding students are expected to be able to communicate well, and be able to classify ideas, ideas or events that they experience in everyday life (Suranti et al, 2016). Given the importance of the ability to conceptual understanding in students, learning activities in schools should carry out meaningful learning activities, so that students are able to conceptual understanding of the material they are learning.

Some research results show that conceptual understanding, especially in the material on the Human Excretion System at SMP Negeri 1 Hutaraja Tinggi, is still low due to the selection of learning models that are not in accordance with the

material being taught (Wardiah, 2020). The results of conceptual understanding at SMPN 16 Hulu Sungai Tengah show that conceptual understanding in the Human Excretory System material is also still relatively low because in the last 2 years the average classical learning mastery was only 67.5% and 66.5%, these results are still below the completeness standard. classical (Fatirani, 2022). In addition, the findings at SMPN 1 Wawo also show that conceptual understanding of the Human Excretory System is still low where the average score obtained by students is around 60.80 to 61.56 with the Minimum Completeness Criteria (KKM) of 65 (Ilhamsyah, 2017). The low level of conceptual understanding in the Human Excretory System material is due to the fact that learning tends to be teacher centered (teacher centered learning) (Fatimatuzzohrah et al, 2020). The process of learning activities that are still teacher-centered can cause students to participate less in class where students only follow instructions from the teacher without being given many opportunities for students to develop skills such as expressing opinions, asking questions, making conclusions, and finding out information independently to solve problems (Nikmah, 2018).

Based on the findings or problems in the research, it can be concluded that the cause of low conceptual understanding is due to the learning process that has not actively involved students and learning activities have not maximized students' thinking abilities such as the ability to analyze information, observe, reason and evaluate. Based on these findings, it is necessary to have a solution in the learning process so that the conceptual understanding can be increased, especially in the subject of the Human Excretory System.

The solution to increasing the ability to conceptual understanding is the application of appropriate and varied learning models so that students are able to play an active role in learning activities

and achieve the expected learning outcomes (Kosasih, 2014). One of the learning models that has been developed by educational experts is the discovery learning model (Irawan, 2017). The discovery learning model was developed by Jerome S. Brunner in 1961, the discovery learning model is a model that empowers students' thinking skills (Akinbobola & Afolab, 2010). The discovery learning model is a model that requires students to be active in learning activities where students conduct investigations and explore material which can later lead students to discover important principles or relationships in the material being studied (Balim, 2009).

Knowledge acquired by students by applying The discovery learning model allows the concept or knowledge to last a long time, because students are actively involved in discovering a concept in the material being studied. The discovery learning model in its application is divided into 3 types, namely guided discovery learning model, pure discovery learning model and expository learning (Bibergall, 1966). In the research, the authors apply guided discovery learning models and pure discovery learning to increase conceptual understanding, especially in the subject of the Human Excretory System.

Guided Discovery Learning is a teaching style in which students are led to discover predetermined outcomes, predetermined goals usually consist of discovering some general principles (Mandrin & Preckel, 2009). In the application of the guided discovery model the teacher acts as an instructor or facilitator who guides students to actively discover concepts or principles from the material being studied, the learning process allows the building of new knowledge that is more meaningful so that the concepts obtained can last a long time. Pure discovery model is a learning model in which learning process activities occur with little or no guidance from the teacher (Dedonno, 2016). Pure discovery learning

model is based on the idea that through independent practice and learning, students will develop appropriate rules and understandings to guide future practice (Roberts et al, 2009).

The low conceptual understanding is not only due to the learning process activities, but also needs to be reviewed on the students themselves, one of which needs to be reviewed is self-regulated learning. Self regulated learning is an active and constructive process whereby students set goals for their learning and then try to monitor, regulate and control their cognition, motivation, and behavior to achieve their goals (Pintrich, 2000). The process of success of students in conceptual understanding of learning material turns out to be influenced by the existence of self regulated learning, where this ability will affect cognition, motivation and the actions or behavior of students in achieving the learning objectives that have been set.

Based on the description above, these two studies form the basis for researchers to apply guided discovery and pure discovery models as learning models that provide opportunities for students to discover and construct their knowledge concepts independently. Research related to guided discovery has also been carried out to improve conceptual understanding abilities (Rohmawati et al, 2013). Then the significance between pure discovery and guided discovery has also been examined in terms of increasing understanding of concepts (Mulyani, 2017), discovery learning is also examined in relation to conceptual understanding but in terms of student activity (Yulianto & Fitriani, 2021). Research related to self-regulated learning on conceptual understanding is also associated with the WEE model with QSH strategies (Wahyuni, 2019), Brain Based Learning (Sardi et al, 2021), Problem Based Learning (Musliha & Revita et al, 2021). Based on this background, this study aims to examine the effect of guided discovery and independent learning

models on the conceptual understanding of the Human Excretory System material in terms of self regulated learning of junior high school students.

METODE

The research method used in this study was a quasi-experimental study with a 2 x 2 factorial design pretest posttest control group design. This design consists of two classes, before the research is carried out, the two classes are given a conceptual understanding initial test (pretest) and after the research is carried out, the two classes are given a conceptual understanding final test (posttest) on the subject of the Human Excretory System. Students' self-regulated learning will also be reviewed and grouped in the category of 27% of the upper group (which has the highest score) and 27% of the lower group (which has the lowest score) (Guilford, 1956), for more details the research design is stated in table 1.

Table 1. Research Design

Self Regulated Learning (B)	Learning Model (A)	
	Guided Discovery (Experiment 1) (A ₁)	Pure Discovery (Experiment 2) (A ₂)
High (B ₁)	A ₁ B ₁	A ₂ B ₁
Low (B ₂)	A ₁ B ₂	A ₂ B ₂

Description:

A₁B₁ : Conceptual understanding of students in guided discovery with high self-regulated learning (27% of the upper group).

A₁B₂ : Conceptual understanding of students in guided discovery with low self-regulated learning (27% of the lower group).

A₂B₁ : Conceptual understanding of students in the independent discovery model with high self-regulated learning (27% of the upper group).

A₂B₂ : Conceptual understanding of students in the independent

discovery model with low self-regulated learning (27% of the lower group).

The population used in this study were all class VIII students at SMP Negeri 1 Kresiek for the 2022/2023 academic year. The sample was selected with the following steps: 1) Determine the research population, namely all students of SMP Negeri 1 Kresiek. 2) Purposive sampling is carried out so that class VIII students are selected (based on the consideration that they will conduct research in the realm of natural science material, namely the Human Excretion System). 3) Cluster Random Sampling was carried out so that VIII D (experimental class one with the guided discovery model) and VIII E (experimental class two with the independent discovery model) were selected. The total number of class students in class VIII D is 34 students while class VIII E is 30 students. Then what was used in this study was divided into 27% of the highest and lowest groups based on the results of self-regulated learning scores, so class VIII D was taken as a sample of 9 participants students with high and low self-regulated learning ability categories while class VIII E was taken as a sample of 8 students with high and low self-regulated learning ability categories so that the number of samples in this study was 36 samples.

This study used 2 types of instruments, namely test and non-test instruments. The test questions given are in the form of multiple choices, to be tested during the pretest and posttest. This test aims to collect data related to conceptual understanding of the material of the human excretory system. Conceptual understanding is measured using a multiple-choice type test instrument totaling 22 questions which refer to 6 indicators of Bloom's taxonomy namely Remembering (C1), Understanding (C2), Applying (C3), Analyzing (C4), Evaluating (C5) and Creating (C6). Each question has 4 alternative answers (a, b, c, and d) with a scoring technique. If the

answer is correct, a score of 1 will be given and if the answer is wrong, a score of 0 will be given. The instrument grid on the conceptual understanding test is presented in Table 2.

Table 2. Conceptual understanding instrument grids

Cognitive Level	Learning Indicators	Question items
Remember (C1)	Explain the meaning of the human excretory system	1
	Name the organs of the human excretory system	2*,3,4,5*
Understand (C2)	Describe the various functions of the organs in the human excretory system	6,7*,8,9,10
Apply (C3)	Determine excretion results and the process of removing waste from various organs of the human excretory system	11*,12,13,14,15
Analyze (C4)	Analyzing the relationship between the structure and function	16,17

	of the excretory organ system	
	Analyze various kinds of disorders of the excretory organ system	18,19*,20
Evaluate (C5)	Linking the stages of the process of urine formation based on where it occurs, the name of the process, and the end result	21, 22*,
	Linking blood filtering modeling to the process of urine formation	23,24*,25
Mencipta (C6)	Summarize various symptoms of disorders or diseases of the excretory organ system	26,27,28,29*,30
Number of Question Items		30
Description: * (invalid question)		

The non-test research instruments in this study were questionnaires (self-regulated learning questionnaires), Student Worksheets (LKPD) and observation sheets for the achievement of syntax stages in the learning model applied. The results of LKPD data and observation sheets are used as secondary data (supporting data) from primary data (test instrument data

and questionnaires). Measurement of self-regulated learning in students uses a questionnaire that refers to indicators namely self-evaluating, organizing & transforming, goal setting & planning, seeking information, keeping records & monitoring, environmental structuring, self consequences, rehearsing & memorizing, seek peer assistance, seek teacher assistance, seek adult assistance, review test/work, review notes, review texts book (Zimmerman, 1990). Each indicator has answers namely SS (Strongly agree), S (Agree), TS (Disagree), and STD (Strongly disagree). Each answer has a score of 1 to 4. The instrument grid in the self-regulated learning questionnaire is presented in the following table 3.

Table 3. Self-regulated learning questionnaire grid

No.	Indicator	Positive Statement	Negative Statement	Total
1.	Self evaluating	1,2*	3,4	4
2.	Organizing & transforming	5,6	7,8*	4
3	Goal setting & planning	9,10*	11,12	4
4	Seeking information	13,14	15,16	4
5	Keeping record & monitoring	17,18*	19*,20	4
6	Environmental structuring	21,22	23,24*	4
7	Self consequences	25,26*	27,28	4

8	Rehearsing & memorizing	29,30	31,32*	4
9	Seek peer assistance	33*,34	35,36	4
10	Seek teacher assistance	37,38	39,40	4
11	Seek adult assistance	41,42	43,44	4
12	Rewiew test/work	45,46	47,48	4
13	Rewiew notes	49,50	51,52	4
14	Review texts book	53,54	55,56	4

Description: * (invalid statement)

Hypothesis testing in this study used Two way ANOVA with $\alpha = 0.05$ using SPSS version 25, as a prerequisite for hypothesis testing, it must first fulfill prerequisite tests such as normality and homogeneity tests. The normality test uses the Komolgorov Smirnov test, while the homogeneity test uses the Levene's test with the help of the SPSS version 25 software program.

RESULT AND DISCUSSION

The purpose of this study was to analyze the influence of guided discovery and independent discovery learning models on the conceptual understanding of the Human Excretion System in terms of students' self-regulated learning. educate. As for the acquisition of data descriptions from the pretest, post-test results and gain conceptual understanding scores of the Human Excretory System in both classes in full are presented in table 4.

Table 4. Description of the data on the results of students' conceptual understanding pretest and post-test scores

Data Description	Guided Discovery		Pure Discovery	
	<i>Pre - test</i>	<i>Post test</i>	<i>Pre - test</i>	<i>Post test</i>
Minimum	14	27	9	23
Maximum	41	86	45	77
Mean	26,74	58,56	27,07	47,23
Standard Deviation	7,93	16,75	9,00	15,47
N	34		30	

Comparison of the achievement of the average pre-test and post-test scores in the two learning models is also presented in Figure 1

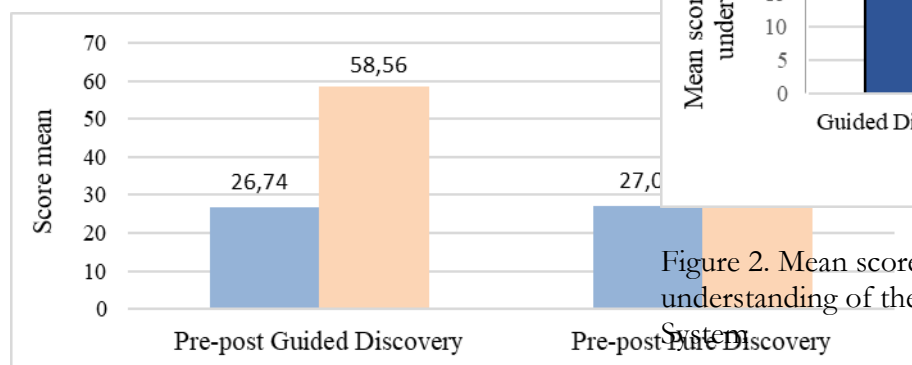


Figure 1. Mean score of pre-test and post-test conceptual understanding of the Human Excretory System

Figure 1 shows that the results of the pre-test in the guided discovery class obtained an average gain score of 26,74, while in the pure class it was 27,07. There is an increase in students' conceptual understanding results after implementing the guided discovery and pure discovery models, where this can be seen from the post-test results in the guided discovery class obtaining an average gain score of 58.56 while in the pure discovery model class it is 47,23. The description of the gain score data obtained from the two classes is

presented in table 5.

Tabel 5. Description of data gain score conceptual understanding

Data Description	Guided Discovery	Pure Discovery
Minimum	9	5
Maximum	59	36
Mean	31,76	20,23
Standard Deviation	12,66	7,96
N	34	30

Comparison of the achievement of the average gain score in the two learning models is also presented in Figure 2

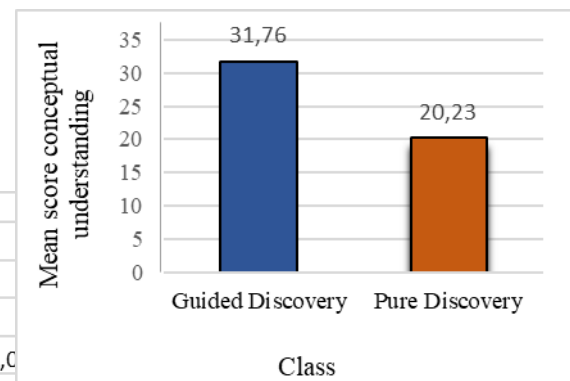


Figure 2. Mean score gain conceptual understanding of the Human Excretory System

Figure 4.2 shows that the class that applied the guided discovery model obtained an average gain score of 31.76 while the class that applied the pure discovery model obtained 20.23. The average gain score in the class that applied the guided discovery model was greater, compared to the class that applied the pure discovery model.

Based on the results of calculating the conceptual understanding of 34 students in a class using the guided discovery model, an average gain score of 31.76 with a standard deviation of 12.66 is obtained. The lowest frequency was in the range 53.5-62.5 which was obtained by one student (2.94%), the highest frequency was in the range 26.5-35.5 which was obtained

by nine students (26.47%). Gain score data for conceptual understanding in classes using guided discovery are presented in Figure 3.

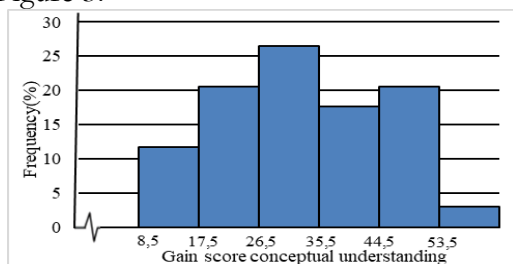


Figure 3 Frequency distribution of conceptual understanding of the guided discovery model

Based on the calculation results of conceptual understanding of 30 students who use the pure discovery model, obtain an average gain score of 20.23 with a standard deviation of 7.96. The lowest frequency was in the range 34.5-40.5 which was obtained by one student (3.33%), while the highest frequency was in the range 22.5-28.5 which was obtained by eleven students (36.67%). Gain score data for conceptual understanding in classes using pure discovery are presented in Figure 4.

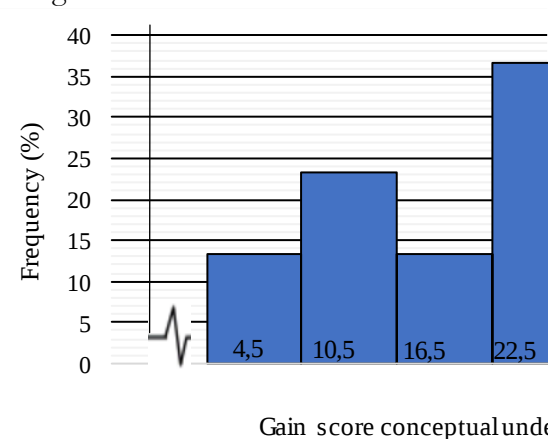


Figure 4. Frequency distribution of conceptual understanding of the pure discovery model

As for the data on the results of the gain in conceptual understanding of students with high self-regulation, they are as follows:

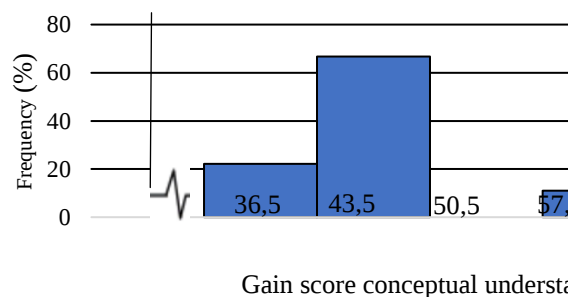


Figure 5. Frequency distribution of conceptual understanding in the guided discovery model with high self regulated learning

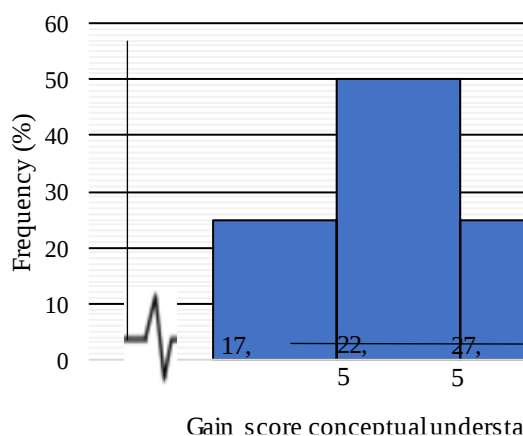


Figure 6. Frequency distribution of conceptual understanding in the pure discovery model with high self regulated learning

As for the results of the gain score for conceptual understanding of students in the low self regulated learning group are as follows:

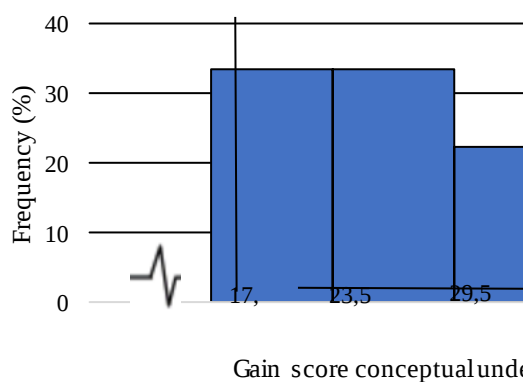


Figure 7. Frequency distribution of conceptual understanding in the guided discovery model with low self regulated learning

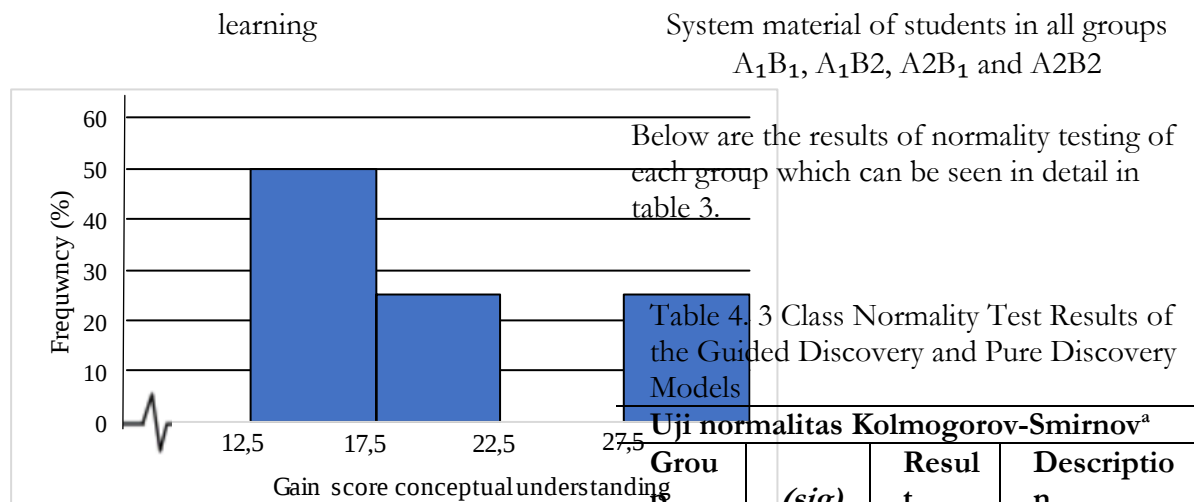


Figure 8. Frequency distribution of conceptual understanding in the pure discovery model with low self regulated learning

The calculation of the average gain score for conceptual understanding of the Human Excretory System material from all students obtained the highest average gain score of 47.44 obtained by the group of students who applied the guided discovery model with the high self-regulation category (A₁B₁). The lowest gain average score was 18.78 obtained by the group of students who applied the pure discovery model in the low self-regulation category (A₂B₂). Data on mastery of the concept of the Human Excretory System material in all groups A₁B₁, A₁B₂, A₂B₁ and A₂B₂ are presented in Figure 9.

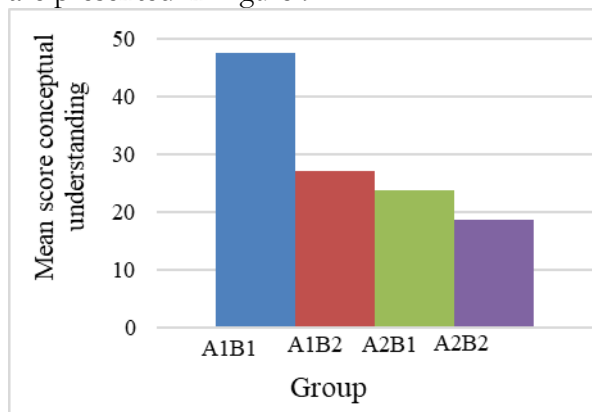


Figure 9. Average conceptual understanding of the Human Excretory

Homogeneity testing in this study used Levene Statistics where a significance value of 0.63 was obtained, the result was more than $\alpha = 0.05$ so that the samples came from the same population. Test the hypothesis data conceptual understanding of the Human Excretory System material by using guided discovery and pure discovery models based on student self regulated learning, carried out by the Two Way ANOVA Test (using SPSS 25) while the data from the results of the test calculations can be seen in table 4.

Table 4. Two Way Anova Test Results

Source	Corrected Model	Sum of Squares	Mean Square	F	Sig.
Corrected Total	3	1348.63	449.54	40.54	.000
Intercept	1	2945.14	2945.14	885.32	.000
Model	1	2058.83	2058.83	61.89	.000

Self regulated learning	1	1426	42.	.00
regula		.94	89	0**
ted				
learn				
ng				
Model	1	458.	13.	.00
Self		12	77	1
regula				
ted				
learn				
ng				

Based on the results in table 4, several things can be concluded, including: the significance value for the learning model is 0.00, namely (sig.) <0.05 , so it can be concluded that there is an influence of guided discovery and pure discovery learning models on students' conceptual understanding on the material of the Human Excretory System. The significance value for self regulated learning is 0.00, namely (sig.) <0.05 , so it can be concluded that there is an influence of self regulated learning of students on the conceptual understanding of the Human Excretory System material. The results of the Two Way Anova calculation test show a significant value in the interaction of learning models (guided discovery, pure discovery) and self regulated learning, namely $0.001 > 0.050$. It can be concluded that there is interaction between classes that apply guided discovery learning models and pure discovery to conceptual understanding of material concepts. The excretory system in which these differences are mutually influenced by students' self regulated learning. The results of the interaction test can be seen in Figure 4.10

Mean score gain conceptual understanding

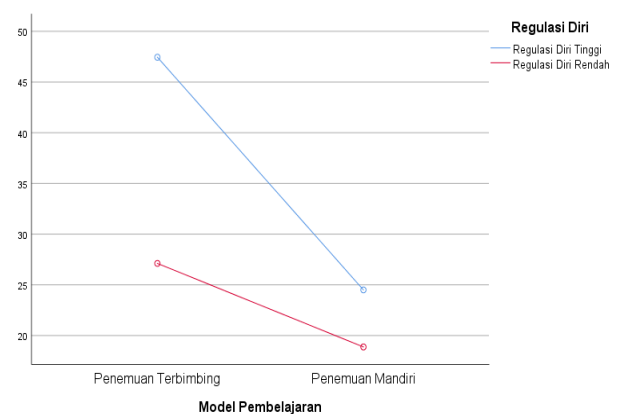


Figure 10. Interaction test results

The results of the hypothesis test showed that there was an interaction between the learning model and students' self regulated learning, so that further tests (Post-Hoc Test) would be carried out to see the significance of each treatment in the four groups. Further test calculations in this study used the Tukey test, the results of the Tukey test in this study can be seen in table 5.

Tabel 4. 6 Tukey Test Results

Depe ndent Varia ble	I (Cat egor y)	J (Cat egor y)	Mea n Diff eren ce (I-J)	S i g .	Desc ripti on
Conce ptual under standi ng	A ₁ B ₁	A ₁ B ₂	20.3 3*	. 0 0	Signi ficant
		A ₂ B ₁	22.9 4*	. 0 0	Signi ficant
		A ₂ B ₂	28.5 7*	. 0 0	Signi ficant
	A ₁ B ₂	A ₁ B ₁	- 20.3 3*	. 0 0	Signi ficant
		A ₂ B ₁	2.61	. 7 8 8	Not signif icant
		A ₂ B ₂	8.24*	. 0 3 0	Signi ficant

	A ₁ B ₁	-	.0	Significant
		22.94*	.0	
A ₂ B ₁	A ₁ B ₂	-2.61	.788	Not significant
	A ₂ B ₂	5.63	.229	Not significant
	A ₁ B ₁	-	.0	Significant
		28.57*	.0	
A ₂ B ₂	A ₁ B ₂	-	.03	Significant
		8.24*	.0	
	A ₂ B ₁	-5.63	.229	Not significant

Based on the results of the Tukey test in table 4.6, it was found that all of them had significant values, except for categories A₁B₂ and A₂B₁ as well as A₂B₂ and A₂B₁ which obtained insignificant values. This is because, the difference in the average difference of the group is not much different. Based on the calculation of the results of the Tukey test, it is also concluded that the application of the most effective learning model in influencing the conceptual understanding of the concepts of students who have high self regulated learning is the guided discovery model, which can be seen from the average difference between A₁B₁ and A₂B₁ of 20.33 with a significant result ie $0.00 < 0.05$. For students who have low self regulated learning, the most effective learning model in influencing students' conceptual understanding of concepts is the guided discovery model, where this can be seen from the average difference between A₁B₂ and A₂B₂ of 8.24 with a significance result of $0.03 < 0.05$.

The conclusion from testing the research hypothesis shows a significance level of $0.00 < 0.05$, meaning that there are differences in the influence of the guided

discovery and pure discovery models on students' conceptual understanding of the concept of the Human Excretory System. The class that applies the guided discovery model is superior in increasing students' conceptual understanding of concepts, compared to the pure discovery model class.

Guided discovery in the learning process emphasizes learning that involves students actively discovering and constructing the concept of the material being studied with the guidance and direction of the teacher. Students' conceptual understanding of concepts taught using the guided discovery learning model is formed in the convergent phase, this stage is designed to ensure students' success in understanding concepts and increasing their involvement in learning.

Guided discovery provides an opportunity for students to actively participate in discovering concepts or principles from the material being studied, the learning process allows the building of new, more meaningful knowledge so that the concepts obtained can last a long time. The application of the guided discovery model has a major role in conceptual understanding students' concepts, this is reinforced by the statement that guided discovery helps students create and organize knowledge because it involves students in the learning process related to the concept being studied (Honomich & Chen, 2012).

Including students in learning activities such as discussion activities, data collection, and experiments were able to improve students' conceptual understanding of concepts this is because in the process of these activities students develop their thinking skills in finding a particular concept so that the concept developed lasts a long time. This emphasis is in line with social cognitive theory which states that social activities such as group discussion activities are important activities for developing students' thinking skills (Kwan & Wong, 2015).

The teacher's direction or guidance in the learning process turns out to have an impact on the level of mastery of students' concepts, because intensive guidance provides clear instructions for students to find steps or strategies in finding, building and connecting the concepts being studied. This is in line with the statement that the guidance provided by the teacher in the learning process will result in recall of concepts or knowledge faster than learning without guidance so that students can better master the concepts being studied (Kirschner et al, 2006).

Self regulated learning is also seen from its influence on students' conceptual understanding of concepts. The significance value for self-regulation is 0.00 (sig.) < 0.05. This indicates that self regulated learning has a significant effect on conceptual understanding of concepts. Self regulated learning is a form of students' ability to exercise self-control, self-observation and evaluate their cognitive processes.

Self regulated learning has benefits for students in achieving the desired goals of learning success, this is because students have the ability to control cognitive, behavior and motivation to achieve these goals. This is supported by a statement which says that self-regulation plays a role in the successful achievement of student learning outcomes (Sebesta & Speth, 2017). High self regulated learning can be seen in the histograms in Figure 5 and Figure 6, showing a positive influence on conceptual understanding in the application of different learning models, both guided discovery and pure discovery.

The level of self regulated learning can affect students in conceptual understanding the concept of a material, this is of course because students who have high self regulated learning will control themselves by being actively involved in the learning process both metacognitively, motivationally, and behaviorally, so that the ability to master the concept is achieved will be optimal

compared to students who have a low level of regulation. The researcher's opinion is supported by research which explains that students with high self regulated learning tend to learn effectively and achieve better learning success in class compared to students who have low levels of self regulated learning (Lai & Hwang, 2016).

In students who have low self regulated learning the level of conceptual understanding of concepts obtained is lower than students who have high self-regulation, this is because students who have low self regulated learning tend to lack motivation to be active in learning, and they do not regulate and plan learning goals. This is in accordance with the statement which states that students who have low self regulated learning lead to lower academic performance (Khat & Vogel, 2022).

Conceptual understanding especially in the material of the Human Excretory System is often considered difficult to understand because it is complex and abstract, so it requires a thorough understanding of the material being studied. These difficulties certainly require students to manage their learning process in studying the concepts of the material being studied, especially in the subject of the Human Excretory System. Students who have a high level of self regulated learning will certainly develop effective learning plans in order to understand the material being studied, then monitor the development of their learning process with full confidence and responsibility and evaluate the learning outcomes they have achieved, this will certainly have an impact on students' conceptual understanding of concepts. students on the subject of the Human Excretory System.

Two Way Anova test results (using SPSS 25) in table 4, shows the interaction between learning models (guided discovery, pure discovery) and self regulated learning in influencing students' conceptual understanding. This indicates that there is an interaction between the

application of learning models and self regulated learning which simultaneously affects students' conceptual understanding, in other words the application of different learning models will affect students' conceptual understanding when applied to students who have different levels of self regulated learning.

Habituation of learning that involves students directly and accustoms them to empowering their thinking skills will make students have the confidence to direct themselves in finding information and discovering the concepts they are studying. This is in line with the statement which says that self regulated learning can develop by involving students in learning process activities (Fihayati, 2018), a fun learning environment involving students and educators can affect cognitive and emotional effects in the process of learning activities where students can freely develop ideas and creativity in completing their tasks properly so that they can have an impact on the success of their learning (Sutikno, 2016).

So thus, it can be ascertained that the level of self regulated learning that exists in students can be utilized in the application of guided discovery and pure discovery models to exercise self-control in the learning process. Self-control by students is ultimately closely related to learning success, especially in conceptual understanding of the Human Excretory System material.

CONCLUSION

Based on the results of data analysis and hypothesis testing that has been carried out. The application of the guided discovery model has more influence on students' conceptual understanding in the Human Excretory System material. The stages of guided discovery accompanied by teacher guidance during the process of exploratory activities can make students more focused in building the concept of the material being studied. Self regulated learning affects students' conceptual

understanding, because self regulated learning is related to how students are able to control themselves in achieving the learning success they have set.

The learning model (guided discovery, pure discovery) and self regulated learning interact with each other towards students' conceptual understanding in the subject of the Human Excretory System.

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