The Effectiveness of Nearpod Interactive Edugame on Learning Retention of Class XI IPA Students of SMAN 1 District of Seventeen

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Abstract

Effective learning media is needed to overcome the low retention of student learning on respiratory system materials in humans. One of the media that can be used is Nearpod Interactive Edugame. This study aims to determine the difference, influence, and magnitude of the effectiveness of nearpod interactive edugame on student learning retention. The research method used is Quasi Experimental Design with Nonequivalent Control Group Design. Sempel determination using simple random sampling, class XI IPA 1 as experimental class and XI IPA 2 as control class. Treatment in the experimental class using Nearpod Interactive Edugame and control class using LKPD. Data collection techniques use measurement techniques and direct observation. Retention data collection tool with retest tests, posttest questions, and retests. The average retention value of the experimental class was 78.85 while the average retention value of the control class was 65.6. The significance of the Whitney retention U-Mann Test results was 0.005 (0.005<0.05). The result of the retention effect size obtained is 1.13 so that the criterion of the magnitude of the effect size is 58.8%. Based on this, it can be concluded that there are significant differences in student retention and have an influence on the retention of students taught with Nearpod Interactive Edugame media.

Keywords: Edugame Interactive, Nearpod, and student retention

1. Introduction

Good learning is actually not just the only activities move knowledge from educator to students, but some possible activities students capable of building their own knowledge, for example, with methods of making meaning and searching for clarity. learning process to be held should must reach objective learning. Achievement objective learning can be seen from development cognitive students. For one is ability remember materials. Success in studies has become indicator quality of education. Success in studies is generally measured by how far students control concepts being taught. retention factor or She sticks draft in memory not enough attention, whereas retention can be an indicator quality results or learning should not only be measured from mastery draft course, but more needs analyzed. The concepts being taught can sticky in memory of students or quickly forgotten (Handayani, 2013:17

Retention or memory is withdrawal, returning everything obtained before. Good retention is needed for every student. For optimal learning, because results of study are measured based on mastery of the material lesson, which is not regardless of the activity remembered. The low activity of remembering students for material learning is one frequent problem that happens in learning (Lubis, 2014: 654). Interview results with a biology teacher at SMA Negeri 1 District Seventeen on Monday December 19, 2022, the teacher said remember or retention low students, p _ This proven by a professor in answer on the material system respiration in humans. Student feel difficulty in understanding material system respiration in humans, caused material This covers extensive material covering _ structure and function system breathing, function of the respiratory organs, mechanism breathing and abnormalities or disturbances respiratory as well as related to mechanisms along with the processes that occur inside body so that students find it difficult to remember material.

Percentage completeness mark test professor class XI even semester SMA N 1 District Seventeen shows _ that mark repetition, in particular eye lesson biology of matter system. Respiratory number completeness is still below 50%. Criteria minimum completeness (KKM) that must be achieved student is 70. Based on percentage completeness mark test every year The 2020/2021 Teaching is 42.5% and Year The 2021/2022 teaching is 47.5%. This shows that level of students is still low.

Interview results with a number of students. Lasting learning _ This only uses book package and LAPD. Learning with that medium has not yet optimized the ability of students to control materials, especially the in-control material system. The medium used this on a number of lack among them pictures that aren't in accordance with picture original and a lot of writing, so students become quickly bored. Besides that, students easily forget to previous material already taught by the teacher.

One way you can do for overcome problem the use of duhamel media interactive based nearpod in the learning process. Nearpod is application for online and offline learning that allows teachers and participants educate interact in a manner direct or not direct. Facility study provided _ There are so many Nearpod applications such as, (1) board interactive, (2) walls discussion, (3) questions evaluation, (4) simulation material interactive, and (5) 3D form media, VR, video, etc (Minalti , 2021:76)

Use of duhamel media interactive nearpod as a learning medium has a possible role in helping students make it easy. understand and remember material lessons he learned. Retention can improve in a number of ways. Among others is studying visually, auditory, and kinesthetic. This will help students find relevance and meaning from the material being taught. The more lots received, processed, and prepared, the more it is easier to recall back stores (Gunawan, 2012). Improvement of the learning process increase retention students can done by choosing the learning media that makes student passion and creates students easier to understand materials. According to Hartono (2016: 255), the use of media can grow motivation to study with objective creation, fun learning _ so that can increase their power remember students learning media are tools used in learning as means to explaining material purposeful learning _ making it easy for you to accept messages (Mining and Dewi, 2014:177). The main learning media is as tool help teach through influence climate, conditions, and environmental learning that is organized and created by the teacher (Arsyad, 2013:15

The more technology grows, the possible for create a learning medium in form of computer-based games or smartphone and be inner teacher to teach in class so that more fun, more interactive as well as not boring. so that growing Spirit impactful learning understanding students. Educate Interactive Unheard is a learning media that will writer study.

Based on problems that have described above, then _ writer interested in studying with title " Effectiveness Educate Interactive Nearpod Against Retention Study Student class XI IPA SMA Negeri 1 District Seventeen Districts Bengkayang. Purpose of research This is for knowing difference,

influence, and magnitude effectiveness of endgame interactive nearpod to retention study students in class XI IPA SMA Negeri 1 Kecamatan Seventeen Districts Bengkayang.

2. Method

This research was conducted using an experimental method. This form of research uses Quasi Experimental Design with a Nonequivalent Control Group Design or quasi-experimental design, namely research that tests hypotheses in the form of cause and effect through the treatment and examines the changes caused by the treatment. As it relates to variable control, it is difficult to use pure experiments.

Time and Place of Research

This research was conducted in the even semester of the 2022/2023 Academic Year at SMA Negeri 1, Seventeen District, Bengkayang Regency.

Population and Sample

The population in thisstudy were students of class XI IPA totaling 40 students. The samples in the study were all members of the population by taking samples using the simple random side technique, namely taking sample members from the population randomly, namely by lottery or lottery method.

Data Collection Techniques and Tools

Data collection techniques in this study are observation techniques and measurement techniques. Data collection tools used are observation sheets and tests. The tests conducted in this study were posttest and retest with multiple choice questions.

Data analysis technique
Data analysis in this study is as follows:
Posttest and retest data processing: The types of questions used in this study were posttest and retest questions. . Posttest and retest results of students from the two experimental classes were given scoring criteria with a score of 1 if the answer was correct and 0 if the answer was wrong. The score will be converted using the formula below:

$$\text{Nilai} = \frac{Skor\ yang\ diperoleh}{skor\ maksimum}\ x\ 100$$

Retention measurements are obtained and analyzed using the gain value.
Gain value = retest – postets
Statistical analysis to test retention differences, through the following tests:
Prerequisite Test
The prerequisite test was used to determine whether the data from the two samples were normally distributed or not through the normality test using SPSS 25 for windows with the Shapiro-Wilk test with a significance level of 0.05.

U-Mann Whitney test
Determine the hypothesis
Ho: retention of the experimental class using nearpod interactive edugames is the same as retention control class using LKPD
Ha: retention of the experimental class using the nearpod interactive edugame is different from class retention
control using LKPD
Test criteria based on significance
Ho is accepted if sig.>0.05
Ho is rejected if sig.<0.05
The U-Mann Whitney test was carried out using SPSS 25 for windows with a significance level of 0.05. The effect of nearpod interactive edugames on student retention is calculated using the Effect Size formula:

$$ES = \frac{\overline{Xe} - \overline{Xc}}{Sc}$$

Information :
ES   = Effect Size
$(Xe)^-$ = average retest count of the experimental class
$(Xc)^-$ = average calculated gain retest control class
Sc   = Standard Deviation of Control Class
Knowing how much the percentage of the Effect Size calculation results can use Cohen's interpretation criteria. Determine effective media for student learning retention if using indicators:
a. There is a significant difference in student retention with U-Mann Whitney
b. Affects the Effect Size value

3. Results and Discussion
Differences in Retention of Students Taught with Nearpod Interactive Edugame Media and with LKPD Media

The average scores of Posttest, Retest, and Gain Retention of students in the experimental class using Nearpod Interactive Edugame and the control class using LKPD are as follows:

Table 1. Average Posttest, Retest, and Retention Gain Values
Experiment Class and Control Class

Class	Postest	Retest	gains
Experiment	73,4	78.85	5.45
Control	72,15	65.5	-6.55

Based on table 1, it shows that the student retention gain in the experimental class is higher (5.45) than in the control class (-6.55). Differences in student retention between the experimental class and the control class were analyzed using the SPSS 25 for windows application. The results of the data analysis obtained are as follows.

After the normality test wascarried out, it turned out that the significant value of the experimental class gain was (0.614> 0.05) then Ho was accepted . It can be concluded that the data was normally distributed while in the control class the significant gain value was (0.020 <0.05) then Ho was rejected, so it can be concluded that the data is not normally distributed. Based on the normality test of one of the two classes not normally distributed, then proceeded to the Mann-Whitney U test. Based on the results of the Mann-Whitney U test, the retention value of students was obtained at a significant level of 0.005. The significance level used was 0.05. Because the significant figure obtained is less than 0.05 (0.005 <0.05) then Ho is rejected. So, it can be concluded that there are differences in student learning retention in the human respiratory system sub-material taught in the experimental class using interactive educational media nearpod and the control class taught with LAPD media.

Media Influence *Edugame* Interactive *Nearpods* to Retention Student

The influence of *edugame* media interactive *nearpod* to retention student. Based on results calculation use *Effect Size* obtained mark of 1.03 which is included in category tall and give influence by 55.4% based on table Cohen's interpretation. Results obtained can concluded that edugame media interactive nearpod give influence positive to retention student.

Edugame Media Effectiveness Nearpod interactive against Retention Student

Effectiveness is something stated size _ how much far the target (quantity, quality, and time) has been reached , or the more big the percentage of targets achieved , increasingly tall its effectiveness . Learning media said effective when fulfil criteria, among others capable give influence, or difference result.
The effectiveness of edugame media interactive nearpod is measured with 2 indicators namely:
a. There is difference retention student in a manner significance based on the *U Mann-Whitney* test with number significance 0.005
b. Influential to retention with mark *Effect Size* more big of 0.8 i.e. 1.03 in category tall with influence by 55.4% .

4. Discussion

Retention is withdrawal, return information. obtained before. If something information until memory long term and information that is ready issued when just moment is needed, that is what it means with retention of students. According to Malahayati (2016), retention refers to the level where studied material _ still attached in memory, because retention related storage process obtained information as a stimulus to be responded and included to in memory period short to memory.

Retest is used For measure retention from every implemented students three Sunday after the learning process. this _ supported with opinion Khumaedi (2012) stated hose time between implementation testing first and second instruments _ usually between two to three week . Length of interval time the because mamori period long somebody moment maintain information around 30 seconds to top . Furthermore If the information obtained student capable maintained longer , then will be transferred in storage period long . This is also one _ _ reason researcher choose period time three Sunday For do a retest.

Election time three weeks is also due on three Sundays. No repetition material system respiration in humans, so when students answer questions it only depends on memory or memory as well as understanding material that has been learned. This, in accordance with Atkinson (2014), states that memory period is type memory that stores lots of information during period long time. In defending information that has stored in memory, term time is above 30 seconds.

Based on results study results after 3 weeks _ give the average result of the retest value and the class Gain value experiment more tall compared to with grades in class control. Better retention results _ tall because classroom learning _ experiment using educated media interactive nearpod . Use of duhamel media interactive unheard makes it easy for students to memorize the images, text, videos, animations, even quizzes For remember Because in the his there is images , text , videos, animations , even quiz For played together, material served with interesting pictures and colors _ as well as no description _ too long, so information can delivered in a manner clear and get accepted maximum. This is in line with statement Khoiroh et al (2014) that appearance color or picture can expedite understanding and strengthening memory of something material. Students like interesting reading _ with A little description and lots of pictures or color. This is in line with study Fahriza et al (2023) that students like interesting learning media, moreover _ If there are lots of concise and practical images _ As explained by Ami et al . (2012), that picture can help reader have faith. Imagination can help somebody increase performance memory and help remember verbal words. Color can also be a form non-verbal communication that can be conveyed in an instant. and more meaning. According to Evi Marcellina (2014), who stated that pictorial media can increase the power to remember students.

The Nearpod app has study forms, quizzes and games, on research. This quiz used Time To Clime and Matching Pairs, resulting in learning nearpod student can Study while can play _ increase motivation Study student. This is in line with Nurhafifah , et al. (2020) stated there is a media game that makes students more motivated to learn science, as well can direct students into the atmosphere. so that can increase my power to remember student. O'day's research (2007) regarding animation in learning biology to retention period long shows that using animation can help students keep information in period long.

In a different case in class control, the average value o the gain value negative (-6.55). That is, there was a decrease in class retest scores control. So it can said that the LAPD media has not maintain information or material for a long time. This is supported by Setiawan's opinion (2015) that learning tends to use LAPD passive and only listen teacher'sexplanation so students only remember materials in period short time. _ The use of LKPD is also less interesting for students. According to (Kartika,et al . 2023), learning media lacking interest for students get bored. participant educated to the material taught by the teacher. p the make mark participant educates not enough from KKM.

Based on the results of the Mann-Whitney U test 0.005<0.05, it shows that there is significant difference between mark retention student class experiment and class control. This is in line with results study by Herlanti, et al, (2005) stated that retention of students using interactive multimedia is faster than students who don't use multi media . This signifies multimedia displays that have the power of imagery, proven capable of longer abstractions. _ draft in the structure cognitive student.

The difference in results test retention scores from second group class caused because of differences in the media used at the time learning, in particular material system respiration in humans. this supported opinion Zakiyatun (2017) that selection of appropriate learning media can help memory

students endure longer. The learning process in class control using LKPD media. Whereas class experiment using educated media interactive nearpod . Students are very satisfied with learning using applications unheard of, and learning more integrated and directed. This, supported by Perez's research (2017), explains that application This can help teachers make presentation interesting materials easy. _ understood. Interest in the media can make students in classexperiment like learning using educated media interactive nearpod.

Activity learning with edugame media interactive nearpod , researcher requests students to interactive and execute every stage. This aims to students capable find Alone his needs during learning. Because when someone capable of finding their needs and consideration hard, then will be interested _ To can understand more faster lessons. This is in line with study Wicaksono (2014) that the more students find marks in activity learning. They will see a connection between activities with interesting things, and students will be more involved in learning.

Biology is frequent visual subject involve order complex events O'Day (2007). Especially on the material system Respiratory human is one _ possessing material _ characteristics difficult to learn _ with method memorizing because load draft order events that aren't easily imagined like structure and function of the respiratory organs in humans. How to memorize tend makes students capable of remembering materials for only a short time (Hikmawati , 2017). because Therefore, a capable medium is needed visualize in a manner clear to students and can hear as well as capable describe complex processes become easy to understand, role possible with use of edugame media interactive nearpod . Edgar Dale (in Arsyad (2007) predicts that acquisition results learning and memory through sense vision around 75%, sense hearing about 13% and other senses about 12%.

Learning process in class Control use of LAPD professor only explain or give material system respiration in humans. through media LKPD and students only listen the teacher's explanation, where the LKPD has not describe the entire learning process and LKPD in the form sheet . this _ make students quickly forget the material that has been taught . According to Malahayati (2016), is low retention caused by the process of understanding students to draft abstracts. No done or obtained through alone. When learning only characteristics information, then what is learned will easily forgotten. Because atmosphere environment very different learning with condition life.

Success use of edugame media interactives based nearpod in increases retention students in class experiments can reviewed by many factors. First, interactive media is a capable medium involving more from One sense students (Abidin, 2013). This is in line with Darman (2016) state that

use various senses can increase retention of students. educate media interactive nearpods use only visuals, audio, and video . Students are alsorequired active in interacting with interactive media at meetings virtual space . According to Yasa (2017), learning media can be interactive if students do not watch and hear but also interact _ direct with learning media the opposite with the media used in class control . The media only engage visually.

Second, the failure of the process of remembering caused by no cashing material that becomes forgotten. Sedyawati (2008) explained that interactive media only increase enthusiastic and considerate student. Enthusiastic student class experiment on learning biology equipment system Respiratory man related to engaging interactive media components _ such as visuals, animations, and videos. This supported opinion Sedyawati (2008) that element animation in the manufacturing medium students interested in learning, so that makes it easy for students to remember and understand material. With the emergence of enthusiasm, students learning biology means will happen repetition in resulting learning _ " in accordance with Halim (2012) that repeated information _ can make information endure longer. Meanwhile, that student class control more Lots listen teacher explanation with LKPD and student assistance No interact straight to the source information.

Third, educating media interactive nearpod can increase retention students . Games will make students feel like Because students study while playing. According to (Hidayaty, et al 2022) feelings like, if someone student has a liking to something learning, then student the things he likes without feeling forced to learn. this _ in line with Slameto (2010) states that feeling like is important thing. _ children educated in lessons taught by the teacher. _ thing that can influence power to remember somebody is concentration when accepting information during the learning process. This is as stated by Nugroho (2012) which states memory refers to the mental process concerned with retrieval, storage, and retrieval return of information or experience when needed. Retention This is key to cognition from an

implemented learning process. All given knowledge during the learning process, as important Whatever that No will mean knowledge that is forgotten quickly and entered into the memory long term students.

Learning using educational media interactive nearpod in class experiments influences positive retention of students. Based on results calculation, Effect size obtained mark of 1.03 with category tall and give influencer by 55.4%. it _ showing that retention of students is influenced by various factors, including the learning media used by the teacher. Because the teacher must creative and selective in choosing learning media for the purpose defined learning can be achieved . This, in line with Azhar (2013), the importance the role of the media " requires educators _ For more creative and innovative in utilise various sources of learning and media. In addition, educated media interactive nearpod can increase retention of students because student games will feel like those games. Games will make students interested because they are visually based. With exists endgame interactive nearpod This student can study through interesting game.

Educate media interactive unheard effectively used in the learning process because it can give significant differences to retention value between class experiment and class control through the Mann-Whitney U test as well give influencer to retention with category. tall through Effect Size calculation.

5. Conclusions

Based on the results of research that has been conducted at SMA Negeri 1 District of Seventeen, the following conclusions can be drawn: (1) There is a significant difference between the retention scores of students who are taught using the interactive edugame media nearpod and worksheets on the human respiratory system sub-material. The results of the Mann-Whitney U test at a significance level of 0.05 yield a significance number of 0.005. (2) Learning using the nearpod interactive edugame media has an effect of 55.4% with an effect size of 1.03 in the high category, on student retention in the human respiratory system sub-material in class XI IPA SMA N 1 District of Seventeen. (3) Nearpod interactive educational games are effective for student retention in the human respiratory system sub-material. This is shown from the significant difference in student retention between the experimental and control classes and the high influence on student retention.

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