DEVELOPMENT OF VIRTUAL SMART HUMAN EXCRETORY SYSTEM LEARNING MEDIA BASED ON ARTICULATE STORYLINE 3 TO INCREASE STUDENT MOTIVATION AND LEARNING

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Abstract: COVID-19 pandemic in Indonesia caused a change in the system of conventional learning activities to distance learning. Some of the obstacles to the distance learning system from the results of the questionnaire analysis of learning media needs for some students and teachers are the low motivation of students in participating in PJJ so that student learning outcomes are also low. Researchers have the idea that PJJ is done by utilizing interactive multimedia which is expected that students do not feel monotonous in participating in PJJ which has an impact on increasing student learning outcomes. Articulate Storyline 3 is one of the multimedia authoring tools used to create interactive learning media with content in the form of a combination of images, text, sound, graphics, video, and animation. This research method adapts the ADDIE development model. The subjects of this study were students of class VIII G SMPN 7 Cirebon City totaling 36 students. The results of the analysis of this study indicate that the interactive learning media virtual smart human excretory system based on articulate storyline 3 on the excretory system material is feasible to use because it can increase students' learning motivation, the average normalized gain index from pretest to posttest is 0.70 high category and the results learning is 0.73 with a high category, and the level of functioning of the virtual smart human excretory system learning media is at a functioning level with a very effective category.

Keywords: *learning media; articulate storyline 3; excretion system; development.*

INTRODUCTION

Articulate Storyline 3 is one of the multimedia authoringtools used to create interactive learning media with content in the form of a combination of images, text, sound, graphics, video, and animation. This research method adapts the ADDIE development model according to Safitri (2022), in his research explaining that the development model consists of five stages which include analysis, design, development, implementation and evaluation. Researchers modify the development model according to needs.The subjects of this study were students of class VIII G SMPN 7 Cirebon City totaling 36 students. The results of the analysis of this study indicate that the interactive learning media virtual smart human excretory system based on articulate storyline 3 on the excretory system material is feasible to use because it can increase students' learning motivation, the average normalized

gain index from pretest to posttest is 0.70 high category and the results learning is 0.73 with a high category, andthe level of functioning of the virtual smart human excretory system learning media is at a functioning levelwith a very effective category.

Based on the results of research conducted by Ratna (2020), it is stated that the Covid-19 pandemic in Indonesia has caused changes in every government system, as well as in the world of education, namely in the conventional learning activity system to distance learning. This change makes the education sector have to adapt to utilize

information technology as a medium so that learning activities continue. Based on this, independent learning is one of the most important aspects of the educational process. This determines students' success in mastering the material being studied. With the current pandemic situation, it is necessary to innovate interactive multimedia learning so that learning is more effective. Effective learning media causes students to be motivated to learn it.

According to Amiroh (2020), Articulate Storyline 3 is a multimedia authoring tool used to create interactive learning media with content in the form of a combination of images, text, sound, graphics, video and animation. Publication of the results of the Articulate Storyline 3 project in the form of web-based media that can be run on various devices such as tablets, laptops and smartphones.

At the time the author made observations at SMP Negeri 7 Cirebon City, distance learning during the pandemic was held through three learning methods; the first PJJ live Streaming Youtube School with its google meet facility as a means of interaction with students, the second uses the school's E Learning application and the third uses local TV channels in the City of Cirebon RCTV Langka Padane. After the researchers observed, based on the results of the questionnaire given to several teachers in the analysis of learning media needs, there were at least 3 (three) main obstacles that the researchers identified. The first obstacle in E-Learning are: 1). Limited human resources, 2) Parents are less willing and able to accompany children to study at home because there are other responsibilities, 3). Learning is still one way. The second obstacle, namely the PJJ RCTV Langka Padane is: 1) not all students at home can catch RCTV Langka Padane broadcasts, 2). passive students because they only watch, 3). The broadcast schedule sometimes changes and does not cover all the material in each subject,). Data from MGMP IPA Cirebon City student response was still low either when the program was broadcast or when working on questions on Google Form after the broadcast, which was around 44.64% (out of 18 State Junior High Schools). The third obstacle is the school's live streaming PJJ; 1) Limited student facilities, 2). The school's server network is sometimes unstable. 3). Learning is still one way, 4).Student participation is still low, about 50% of all students at the level. 5). Lack of interactive students in learning, monotonous learning methods are less creative and interactive students.

From some of the obstacles to the distance learning system above that the researchers took fromthe results of the questionnaire analysis of the needs of learning media for some students and some teachers, it can be concluded that the outline is due to the low motivation of students in participating in PJJ so that student learning outcomes are low, so researchers have the idea that PJJ is carried out. At this time it is by utilizing interactive multimedia which is expected that students do not feel monotonous in participating in PJJ which has an impact on increasing student learning outcomes. Interactive multimedia is a combination of various media in one program and provides a reciprocal response for users to be able to carry out various learning activities (Rafmana & Chotimah, 2018). Interactive learning allows students to easily understand and absorb the material being taught (Rafmana, et al, 2018).

The author's idea as an improvement step from the current distance learning process is to design an interactive learning media, where studentsnot only see video presentations of material delivery,but can also interactively choose materials, do exercises, and take tests in one application. By using the Articulate Storyline 3 application, the author tries to design a virtual packaging of teaching materials on the excretory system material in humans. Articulate Storyline 3 is a program that cansupport modern digital-based learning designers ranging from beginners to professionals. Darmawan (2016) states that Articulate Storyline 3 is an application program supported by smart brainware in a simple manner with interactive tutorial procedures to help users format CDs, personal web and word processing, through templates published both offline and online. Articulate Storyline 3 is oneof the multimedia authoring tools.

Science learning about the excretory system in humans requires an in-depth understanding of the excretory organs, their functions, as well as disorders and prevention. Learning that is only based on memorization is less effective, so media is needed that facilitates students' understanding. Although some teachers have used PowerPoint slides, this approach is often limited to transferring book text to slides due to the limited capabilities of technology-based media management. Therefore, learning media needs to be developed further. This research aims to develop interactive learning media using the Articulate Storyline 3 application for material on the excretory system in humans. This is in accordance with research by Wahyu Rahmadhani (2022) which shows that the results of the pre-test and post-test of students are seen in the

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average score of students in the pre-test, 58.12, while the average score of students in the post-test is 71.87. . Then, based on the results of the paired sample t testcalculation, the Sig value is stated. 2 (2-tailed) is 0.00 < 0.05, so there is a significant difference between learning outcomes in pre-test and post-test data. It can be concluded that before and after the implementation of interactive multimedia it is very interesting and effective so that there is an increase in student learning outcomes.

Based on this, the author is interested in conducting a study entitled "Development of VirtualSmart Human Excretory System Learning Media Based on Articulate Storyline 3 to Improve Student Motivation and Learning Outcomes on Human Excretory System Material".

METHOD

Research design in this case the development design of virtual Smart Human The Excretory System Based on Articulate Storyline 3 adapts the ADDIE development model, which is a development model consisting of five stages including analysis, design, development, implementation and evaluation. The ADDIE development model was developed by Dick and Carry (1996) in Rianto (2020) to design a learning system.

The researcher modifies the development model according to the needs, the flexibility of each component that can be translated according to the needs into advantages and disadvantages ofADDIE, as follows: Subjects in this study were all students of class VIII G SMPN 7 Cirebon City in the 2021/2022 academic year, totaling 36 students, the object of this research is the interactive learning media Virtual Smart Human Excretory System Based on Articulate Storyline 3. The research will be conducted at SMP Negeri 7 Cirebon City. The location is on Jalan Ciremai Raya number 65 Perumnas, Larangan.

Figure 1. *Research flow*

RESULTS AND DISCUSSION

The results of the analysis of this study indicate that the interactive virtual smart human excretory system learning media in science lessons is the excretory system material in humans which was developed using the articulate storyline 3 software published in html5 form, which is a learning media maker software supported by text content. , images, audio and video that can be adapted to the learning objectives. The resulting media is also supported by interesting quiz content and a daily test menu (posttest), so that students can immediately see their scores and students can directly interact actively in learning activities that are more independent so that they can increase motivation in learning. These results are in accordance with the research of Rianto (2020), Rohmah & Bukhori, (2020) stating that Articulate Storyline 3 is one of the multimedia authoring tools that can be used to create learning tools that interact with each other with content formed from a combination of text, images, graphics, sound, animations, and videos. Articulate Storyline publishing the results of a web-based (HTML5) or a file application that can run on a variety of instruments such as a laptop, tablet, smartphone or mobile phone, media interactive learningis capable of making students more active and motivated in learning.

The development of virtual smart human

Excretory System-Based Interactive Learning media based on Articulate Storyline 3 was carried out in several stages. As for in this study, the steps according to the ADDIE model were used, starting from analysis, design, development, implementation and evaluation which will be explained as follows:

Analysis phasecurriculum analysis

At this stage, researchers conduct an analysis based on the curriculum that applies at SMPN 7 Cirebon City, namely curriculum 13 and the Covid-19 emergency curriculum. The stage of instructional analysis is to make adjustments between the material in the 2013 curriculum book for science lesson content and distance learning modules during the covid 19 pandemic for junior high school level with excretory system material in humans presented in the learning media.

Based on the results of the curriculum analysis and the needs that have been obtained, the development of interactive learning media is needed in distance learning for the purpose of improving student learning outcomes and motivation, called interactive because this media is designed to involve active user responses. In addition, the development of interactive learning media supports the theory put forward by Sadiman (2009: 7) in Rafman (2018) explaining that the media is anything that can be used to channel messages from the sender to the recipient so that it can stimulate thoughts, feelings, attention, interests, and interests. the attention of students in such a way that the teaching and learning process occurs from the opinions of experts it can be concluded that interactive learning media are learning media based on text, images, sound and animation and can provide feedback to users of what has been inputted into the media to help the learning process thus making the teaching and learning process more interesting.

Needs analysis

Assessment was conducted by distributing a questionnaire using google form in the form of a link to 94 students and 6 science teachers at SMPN 7 Cirebon City, namely to find out the state of learning at home, learning facilities for teachers and students, motivation in distance learning and the need for learning using interactive media based on articulate storyline 3. The results of the needs assessment (need assessment) show that interactive multimedia is indeed needed in the PJJ IPA process during the Covid 19 pandemic, 100% of allteachers and 97.5% of students expressed interest and wanted to use interactive multimedia based on articulate storyline 3 in the science learning process, so that the development of multimedia articulate storyline 3 really needed to be developed and was expected to be a solution to increase student motivation and learning outcomes on human excretory system material.

The software analysis

Use of this software is like making powerpoint lessons but combined with a trigger function without coding that is easy to use to enable navigation buttons, Articulate Storyline 3 is a powerful application as an interactive and easy e-learning creation tool without using a complicated programming language, There are several conditions that must be met to install the Articulate Storyline 3 application on a computer, which Amiroh, S.Kom (2020) has stated in his book Proficient in Creating Articulate Storyline Interactive Media 3.

Design stage

Compiling the instrument

Research In the form of a grid of questions, questions and answers to 30 multiple-choice test questions for learning outcomes, the test sheet for the validity of the learning outcomes test instrument by the teacher. science learning practitioners, Questionnaire responses to the interest of sis wa (large scale on the use of interactive media, Questionnaire of student responses to media trials on a small scale, Questionnaire of student learning motivation observation sheet before and after learning using media, Questionnaire of observation sheet on media functioning on student motivation and learning outcomes previously created GBIM , which contains information on visual and audio forms, in the form of designs forall media displays and each display design, descriptions of navigation and animation, and descriptions of narration/audio. Story is made as a guide for researchers in the next stage, namely making media.

Development

Stage The development stage is carried out by creating a virtual learning media product for the Smart Human Excretory system based on Articulate Storyline3 in accordance with the results that have been carried out at the design stage obtained by GBIM, material descriptions, flow chart, and storyboards. The development stage consists of three stages, namely, pre-production, production, and post-production, which are as follows:

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Figure 3. *Opening*

Figure 4. *Media usage*

Researchers begin to develop an Outline of Media Content which contains things that will be presented in virtual learning media smart Human Excretory system Based on Articulate Storyline 3.

Develop flow charts or the diagrams

Following is a flowchart of the interactive virtual learning media smart Human Excretory system based on Articulate Storyline 3.

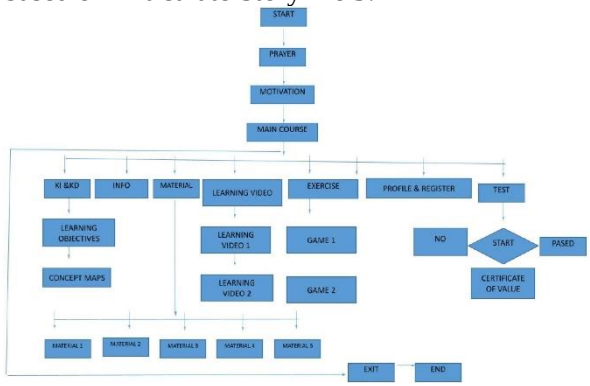

Figure 5. *Flowchart design of the interactive learning media virtual smart Human Excretory system Based onArticulate Storyline 3*

Creating a storyboard

Storyboard is structured according to the

Figure 6. *Exercise (game) instructions menu and daily test*

Figure 7.*Backsound choices*

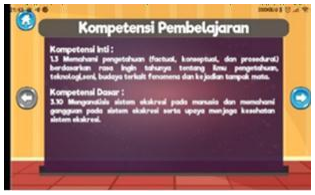

Figure 8. *Competency menu*

Figure 9. *Learning prayers and learning motivation*

Figure 10. *Main menu of human excretory system materials*

Figure 11. *Developer profile*

Figure 12. *Student achievement certificates*

Research analysis at the design stage, resulted that the preparation This design greatly influences the overall form of the interactive learning media that will be developed, at this stage according to the research of Nadia Aprilia (2021) in Rianto (2020) which states that the development stage is carried out by makingstoryboards as an elaboration of the designed learning flow (flowchart).) so as to produce learning media which will later be revised and validated so that they produce valid learning media.

Material validation test material

Experts for the Virtual Smart Human Excretory System learning media consist of two validators, the first is Mrs. Dr. Hj. Ria Yulia Gloria, M.Pd, she is a Biology Lecturer at IAIN Syekh Nurjati Cirebon and the second is Drs. H. Sugihartono, M.PdI who is the Supervisor of SMPN 7 Cirebon

City who is also the Supervisor of Science Lessons at the Cirebon City Education Office, media validation by material expertsis carried out in two stages before the media is tested ona small scale and large scale media trials.

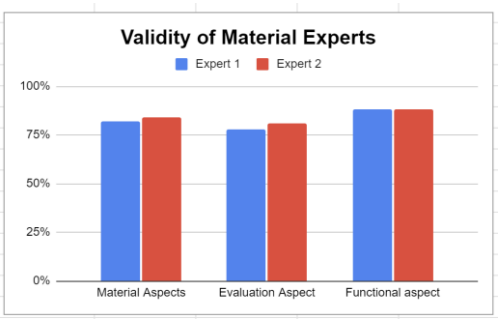

Figure 13. Graph of material validity analysis phases

Media validation test

Based on the results of the validation tests that have been carried out, the validity of the Virtual Smart Human Excretory System Learning Media According to Material Experts (validator 1 and validator 2) in stage 1 and stage 2 can be seen in the graphic form below.

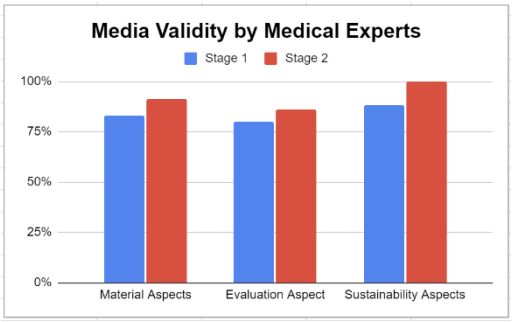

Figure 14. *Media validity analysis phase 1 and phase 2*

Description The graph shows the percentage increase in all aspects. Both in the material aspect, evaluation aspect and functional aspect. The highest aspect is found in the functional aspect of the 2nd stageof validity. Based on the calculation of the feasibility ofthe media by material experts in each aspect, it gets a very good validity score with the category of Very Eligible to be used as a learning medium by material experts.

Validation test of science learner experts

In the validation of the development of the Virtual Smart Human Excretory System learning media, two science learner practitioners were involved. The science learning practitioners are those who teach science subjects for class VIII and class IX, namely Mrs. Yeni Prabandari, S.Si, M.Pd and Mr. Ocid Rosid, S.Pd who are science teachers at SMPN 7 Cirebon City, validation is carried out related to the Relevance Aspect Materials/Contents, Language Aspects and Media Functional Aspects for Learning Strategies developed by filling out questionnaires on a scale of 1-4. Media validation by science learning practitioners was carried out in two stages before the media was tested on a small scale and the media was tested on a large scale.

The implementation

Phase Phase of the interactive virtual learning media smart Human Excretory system is carried out to measure student learning outcomes and student learning motivation with a design – group pretest- posttest design, namely by pretest before being given treatment. In the field trial conducted by all students of class VIII G SMPN 7 Cirebon City as many as 36 students. The field trial was conducted on Saturday, August 21, at 08.00 to 10.00 WIB via ONLINE with the googlemeet application via the link: : https://meet.google.com/dji-xpdc-xin because it is still distance learning, while the link for learning media The interactive virtual smart Human Excretory system, namely https://bit.ly/Media_Interaktif_HES , isdistributed to students during ONLINE learning.

After revising the Virtual Smart Human Excretory System learning media product from the experts, the researcher conducted a small/limited trial intended to find out an initial picture of how prospective users respond to the Virtual Smart Human

Excretory System learning media before involvingmany students. The trial was carried out online because it was implementing distance learning, namely by sharing the media link https://bit.ly/MediaInteraktifHES which was in HTML 5 form. Aspects of the small group trial assessment included: (1). Aspects of Learning Motivation afterbeing averaged is 4.72 with a very good category and94.40% is obtained so that it is included in the veryfeasible criteria, (2). The Ease of Use aspect after beingaveraged is 4.52 with a very good category and 90.30%is obtained so that it is included in the very feasiblecriteria (3). The attractiveness aspect of the appearance after being averaged is 3.88 with a very good category and 77.60% is obtained so that it is included in the appropriate criteria, and (4) Aspects of Functionality/Usefulness after being averaged is 4.52 with a very good category and 90.30% is obtained sothat it is included in the very feasible

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criteria, thisshows that the interactive multimedia developed istheoretically feasible, thus the quality of interactive multimedia in terms of content feasibility aspects, according to material experts, media experts, andbiology teachers, it has a very good category. The same research was also conducted by Yanti et al., (2014) inRafman, et al (2018) regarding Character-Based Interactive Media on Human Circulatory SystemMaterial for SMA that was developed and is very validand very practical to be used and utilized in the teaching and learning process.

Evaluation stage the gain learning

Results of the analysis of the normalized gain index in the experimental class show the low category0 students (0%), the number of students belonging to the medium category are 11 students (31%) and those included in the high category as many as 25 students (69%). The increase in the average normalized gain index from pretest to posttest is 0.73 with a high category. While the gain inthe control class showed a low category of 8 students (22%), the medium category was 21 (58%) and those who got the high category were 7 students (19%). The increase in the average normalized gain index from pretest to posttest is 0.49 in the high category.

normalized gain index from pretest to posttest is 0.73in the high category and t count > t table and the significant value is less than 0.05, so H0 is rejected and Ha is accepted. So there is a significant difference in the learning outcomes of the experimental class and thecontrol class. Thus, the development of virtual learning media Smart Human Excretory System based on Articulate Storyline 3 can improve student learning outcomes on human excretory system material. This is in accordance with research by Bahrianti (2024) regarding the influence of the successful use of articulate storyline interactive multimedia learning media in learning. It was proven in research involving the development of Articulate Storylines that there wasan influence of the use of articulate storyline interactive media on students' learning interest and its use was more easily accessible in science subjects. in class IV at Samata State Elementary School. Another research result is research by Triyanti (2015) in Deni, S(2020). 13 which shows that interactive multimedia developed on Nervous System material is suitable for use in biology learning.

Normality test

The results of the normality test in the test of normality table above the experimental class learning outcomes data show a significant value in the Shapiro- Wilk test, a significant value of 0.626. Therefore, the significant value is above 0.05. Then the experimental class learning outcomes data are normally distributed. The normality test of the control class learning outcomes showed a significant value in the Shapiro Wilk test which showed a significant value of 0.206. Because the significant value is above 0.05. Then the control class learning outcomes data are normally distributed.

Homogeneity the test

Table of Levene Test homogeneity test results below, shows the significance level or probability valueis below 0.05, so H0 is accepted, meaning that the data is not homogeneous.

Table 1. *Test of homogeneity of variances*

L evene Statistic	f1	f2	Sig.
1			002
0.712		0	

Result of learning

Judging from the results of the N-gain test, the development of interactive virtual learning media for a smart human excretion system based on a 3-articulation storyline in human excretion system material in this research was able to improve student learning outcomes and student motivation in learning specifically. in distance learning so that it is conducive and effective. Sunarti Rahman (2021), in his research explaining that motivation is defined as a force that encourages someone to do something. Motivation can be said to be a drive that comes from within the subject. Teachers need to foster students' learning motivation to obtain optimal learning outcomes to achieve certain goals.

Test Based on the homogeneity test, it shows that the data is not homogeneous, so the decision is taken from the Equal variances not assumed line. In the Equal variances not assumed line, the t-test value is 5.666 and significant is 0.000. Because t count > t table and the significant value is less than 0.05, then H0 is rejected and Ha is accepted, so there is a significant difference between the experimental class and the control class learning outcomes.

Based on the results of research analysis on the

function of virtual smart human excretory system learning media in science learning, the material on the human excretory system in this study was observed from the results of observations in three stages, namely at the preliminary, core and closing stages, what was observed was student activity regarding the function of the media. in learning. According to Sagala in Soesilawaty Halim (2022) all teaching components must be played optimally in order to achieve the learning objectives that have been formulated before learning is carried out. So that the learning process can take place well, the teacher must design the learning thatwill be implemented, especially determining learning steps that are appropriate to the characteristics of the material to be taught and creating indicators to determine whether the learning is successful. what has been designed can run effectively or not.

CONCLUSION

The virtual smart human excretory system interactivelearning media based on the articulate storyline 3 on the excretory system material is feasible to use because it can improve student learning outcomes towards classroom learning. pretest to posttest is 0.70high category and learning outcomes are 0.73 and thelevel of functioning of the virtual smart human excretory system learning media is at the functioning level with a very effective category.

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