THEORETICAL FEASIBILITY OF INTERACTIVE MULTIMEDIA BASED ON ARTICULATE STORYLINE IN LIQUID PRESSURE

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Abstract

This study aims to produce interactive multimedia based on Articulate Storyline in liquid pressure for 8th grade which is theoretically feasible based on media validity. The research method used is R & D (Research and Development) which is limited to stage 5, product revision. The results of the study show that the interactive multimedia validity gets very decent criteria. In the aspect of media format, the percentage is 92.86%, while the material aspect of the media has a percentage of 94.44%. The results of the study indicate that interactive multimedia based on Articulate Storyline is theoretically feasible.

Keywords: interactive multimedia, Articulate Storyline, liquid pressure

INTRODUCTION

The development of ICT (Technology, Information and Communication) has a positive impact in education sector. Students can access information quickly from various sources through the presence of ICT. Teachers in schools are required to be able to use technology products in classroom so that the achievement of learning objectives will be optimal (Wibawanto, 2017). Based on Ministry of Education and Culture Regulation No. 22 (2016), to improve the efficiency and effectiveness of ongoing learning, teacher can use technology, information and communication according to situations and conditions.

Science is knowledge that studies the universe and its contents, as well as the events that occur in it that are developed by experts through a series of scientific processes carried out carefully (Sujana, 2014). According to Sujana (2014) it is very important to teach science in school, one of the reasons is that science laws can be used and useful in daily life. One of the science materials that be taught in junior high school is liquid pressure.

The liquid pressure material is taught in Grade 8 and is listed in KD 3.8, which is to understand substance pressure and its application in daily life, including blood pressure, osmosis, and capillary transport network in plants. According to Saputri (2018), in carrying out the learning process of liquid pressure it requires supporting media such as learning media that can visualize the phenomena that will be observed by students so that students can more easily understand the information that be delivered by the teacher. Based on the pre-research conducted at SMPN 1 Sidoarjo, the media that is often used is Microsoft Powerpoint. According to the Science Teacher of SMPN 1 Sidoarjo, the use of powerpoint is not optimal because it is not able to make students active, students just observe it, whereas according to Nugraheni (2018) student involvement in the learning process influences student success.. In addition, 87% of students assume that science lessons are sometimes difficult to understand. This is showed by the results of the average Science National Exam at SMPN 1 Sidoarjo in 2017/2018 decreasing from the previous year. According to Ornek, Robinson & Haugan (2008) learning difficulties are caused by several factors, (1) Low motivation and interest in learning science, (2) No longer learning the material he has obtained, (3) Lack of students' initial knowledge, while science content is considered difficult because, (1) There is science material that studies abstract objects, (2) There is cumulative science material, students will have difficulty understanding other concepts if students do not understand a concept related to the concept that will be learnt, and (3) There is material that requires mathematical abilities.

Teachers need the right media to attract students' attention during learning, turning complex teaching materials into simple and clear material, and making abstract concepts into concrete concepts (Khoiriah, 2016). Instructional Media that integrates various media formats is interactive multimedia. (Andresen & Brink in Rusli, 2017). Interactive multimedia is included in digital media. According to Subekti

(2016), learning using digital media can increase motivation, take risk and willingness to experiment for students. Therefore, the use of interactive multimedia will involve several senses. According to Arsyad (2016: 12), information will be easier to remember by students if students use many sense devices when receiving the information. According to Kapri (2017), multimedia is an effective method of learning science and will improve student learning outcomes. Some basic strengths in the use of interactive multimedia according to Phillips (Hasrul, 2010) are, (1) Mixed, combining various media formats, (2) User control, users can use media wherever and whenever they are. (2) Simulation and visualization, abstract information can be more easily understood by students through visualization, (3) Learning styles, different learning styles can be accommodated through the presence of interactive multimedia. There are three different learning styles in students. They are visual, auditory and kinesthetic (De Potter and Hernacki in Nugraheni, 2018). A good learning process must use a variety of models in order to accommodate these learning styles (Nugraheni, 2018).

There is a lot of authoring software that can be used to create interactive multimedia, one of which is Articulate Storyline. Articulate Storyline is a sophisticated software that can build interactive e-learning modules. The Articulate Storyline display is similar to Powerpoint but offers more facilities (UC Libraries, 2018).

Several studies have been conducted showing the effectiveness of learning when using interactive multimedia, including the research conducted by Kapri (2017) which shows that the learning process using interactive multimedia has proven to be better than conventional learning process in teaching science material. In addition, in the study of Kamila (2018), the use of interactive multimedia with tutorial models on circulatory system material can improve student learning outcomes.

Based on the description above, a development research was conducted aimed to producing interactive multimedia based on Articulate Storyline in liquid pressure material for Grade 8 that is theoretically feasible.

METHOD

This research is a development research type of instructional media. This study refers to the R & D (Research and Development) model which in this study carried out up to 5 stages, (1) Potential and problem stages, (2) Data collection, (3) Product design, (4) Product validation, (5) Product revision (Sugiyono, 2013). The target of this study is interactive multimedia based on Articulate Storyline in liquid pressure material and media validation results.

The data collection technique in this study is the questionnaire method with the research instrument used is the media validation sheet. The media validation sheet is used to obtain an assessment of instructional media from media format aspect and media material aspect with a Likert scale. This validation sheet was filled out by the validators, two lecturers of science education and one science teacher.

The results of media validation are used to analyze the feasibility of the media. The feasibility of media can be known by using this following formula:

$$\text{Presentase}\ (\%) = \frac{\textit{Jumlah skor pengumpulan data}}{\textit{skor maksimal}}\ x\ 100\%$$

The percentage of feasibility is converted to the scale of the score interpretation. Media is said to be theoretically feasible if every aspect gets a percentage of ≥61%.

Tabel 1. Score Interpretation Criteria

Percentage (%)	Criteria
0-20	Not Feasible
21-40	Less Feasible
41-60	Quite Feasible
61-80	Feasible
81-100	Very Feasible

(Riduwan, 2016:41)

RESULTS AND DISCUSSION

The data obtained in this research development are the results of theoretical feasibility tests. Theoretical feasibility of media is obtained based on the results of media validation. Media validation was carried out by three validators, two lecturers of science education and one science teacher at SMPN 1 Sidoarjo. The validity of interactive multimedia is viewed from two aspects. They are media format aspects and media material aspects. The media format aspects include the operation of the media, graphic quality, audio quality, video quality, animation quality, and image quality and interactivity, while the material aspects of the media include the accuracy of the material, grammar, and bibliography. Overall, interactive multimedia based on Articulate Storyline

is classified as very feasible. This shows that the media is theoretically feasible.

In the aspect of media format, interactive multimedia obtained a percentage of 92.86%. The average validation results of the three validators in each indicator can be seen in Figure 1 below:

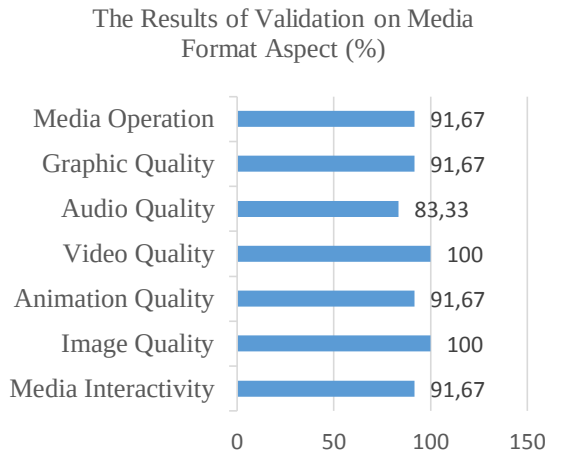

Figure 1. The Results of Interactive Multimedia Validation on Media Format Aspect

The percentage in the aspect of the operation of the media is 91.67%. This shows that interactive multimedia can be operated easily by users. The interactive multimedia has been equipped with clear usage instructions, equipped with the Home button and no errors when used. One of the assessment criteria for interactive multimedia approved by the LIPI, Pustekkom, and Ilmukomputer.com teams is usability, which is easy to use and simple to operate. The availability of user guide menu, logos and buttons that can help new users. Other criteria are reliability. The media can be said to be reliable if the media can run without a crash or error (Wahono, 2006).

The percentage of graphic quality is 91.67%. This shows that the size, type, and layout are ideal and the overall appearance of animation, images, and videos is well presented and not broken. Page design (layout) needs to be considered so that the elements of text, video, images and animation are arranged artistically (Wibawanto, 2017). The layout that is commonly used is the grid method. Navigation can be placed at the top or left side and the content is placed in the middle area.

In the audio aspect, interactive multimedia gets a percentage of 83,33%. This shows that the background music of interactive multimedia is appropriate, it does not interfere the user's concentration, and the button sound is heard clearly. The percentage of audio quality is lower than the others due to the audio background theme is funny song so that it is incompatible with interactive multimedia material. Therefore the audio background of interactive multimedia needs to be revised. According to Cossar (Cahyaningtyas, 2016), the use of background audio must be calm music and helps students concentrate.

Video quality aspect gets a score of 100%. This shows that the videos are attractive, video content supports the delivery of material, and audio and text components in the video are clearly displayed. According to Rusman (2015), video can describe the real state of a process, phenomenon or event. The use of instructional media can help students understand phenomena and condition it into science (Fitriyati and Muzil, 2016). Information or messages will also be easier for students to remember if students use multiple sensory devices when receiving information such as when viewing audio-visual videos (Arsyad, 2016: 12)

Animation quality aspect gets a score of 91.67%. It shows that animation is clearly displayed, the speed of the animation is appropriate, and the animation supports the delivery of liquid pressure material. According to Wibawanto (2017:7), animation can help to provide photo object that are too complex so the quality of the animation needs to be considered. The existence of animation can make the learning process more interesting. This is proven by the results of Rosdiana and Sari research (2016) where 95.35% of students were attracted to animated powerpoints; 95.35% of students are interested in the teaching atmosphere.

On the aspect of image quality get a percentage of 100%. This shows that the images used are clear, easy to understand, and support the delivery of material. According to Arsyad (2016: 109), the main purpose of images is to visualize the concepts that are to be delivered to students.

The percentage of media interactivity aspect is 91.67%. It shows that interactive multimedia is equipped with clear navigation buttons instructions, the navigation icon uses colors that are easily found by the user, and navigation icons supporting user involvement. According to Rusman (2015: 64), an important characteristic of interactive multimedia is that students not only pay attention to the media or objects but are also required to interact such as clicking buttons or doing quizzes.

In the material aspects of the media, interactive multimedia obtained a percentage of 94.44%. The

average validation results from the three validators in each indicator can be seen in the following Figure 2:

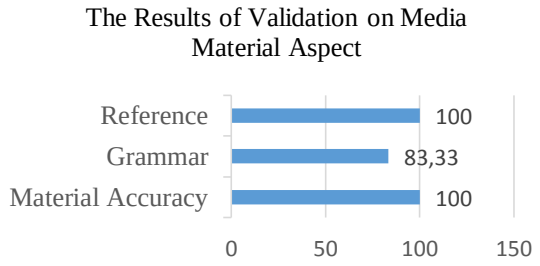

Figure 2. The Results of Interactive Multimedia Validation on Media Material Aspect

The percentage of material accuracy is 100%. This shows that the material and terms used are appropriate with the concept of liquid pressure for middle school students, material and quizzes are also appropriate with learning indicators, and material presented systematically. According to Budiyanto et al (2018) the role of the media will not be seen if its use is not in line with the content and objectives of the learning. Therefore material and quiz in the media must be in accordance with the learning objectives to be achieved. This is one of the differences in the interactive multimedia based on Articulate Storyline with other media. Another innovative side of interactive multimedia is Quick Quiz. Quick Quiz is a question that displaced on the sidelines of the material presentation. The Quick Quiz is not only in multiple choices but also in the form of drag and drop, matching drag and drop, and matching drop down. In addition, interactive multimedia is equipped with pHet simulation programs and worksheet (LKPD) which can be downloaded offline.

Percentage of grammar aspect is 83.33% with very decent criteria. It indicates that the language in media is standard and scientific for learning, the language used is easy to understand and communicative, and the terms used in the media is consistent. According to Darmawan (2013: 138), interactive multimedia must be able to overcome material that is too much description because it makes students bored to read it thoroughly.

In the reference aspect get a score of 100%. This shows that the references have been included in the media, these references for the last 10 years, and the references contain material and video literature.

CONCLUSION

Conclusion

Based on the results of the study, it can be concluded that the interactive multimedia based on Articulate Storyline in liquid pressure material for Grade 8 is declared theoretically feasible. The theoretical feasibility in terms of media validation is 92.86% in the media format aspect and 94.44% in the media material aspect.

Suggestions

Based on the research that has been conducted, it is necessary to suggest the following:

1. Interactive multimedia based on Articulate Storyline needs to be completed with examples of problems and their solutions.
2. Videos in interactive multimedia based on Articulate Storyline need to be equipped with text/subtitles.
3. Java files need to be provided when linking a pHet simulation program to interactive multimedia because there are several pHet simulation programs that require java.

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