Students’ responses on the development of flash learning media in light material

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Abstract. This research aim was to know the student responses on the development of flash learning media in light material. The method of developing learning media used ADDIE which included 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation. The instrument used to measure student responses to learning media used questionnaires. The sample used to retrieve student responses were 36 students. Analysis of student responses used descriptive statistics. Based on the results of data analysis, it can be seen that student interest in learning media was 85.94% with a very good category, students’ conceptual understanding was 80.82% with very good categories, and assessment of the appearance of learning media was 77.22% with good categories. From these results, it can be concluded that the student responses to the media developed was very good with an average percentage of 81.33%.

1. Introduction
The university of Trunojoyo Madura has a vision of being a University that excels in the fields of Education and Research. To support the achievement of this vision, the implementation of learning by lecturers can be directed to research-based learning. Research-based learning can be applied to the first Basic Physics courses. Research developed in this study is in the form of flash learning media on light material. The results of the development of learning media are then used in lecture activities.

This research is based on the fact that students are still having difficulty learning the concepts of physics. In addition, the motivation of students to learn Physics is also lacking because in the student mind set, Physics is difficult [1]. Therefore, a computer animation-based learning media was developed using the macromedia flash program with the intention of attracting interest in learning and visualizing abstract concepts.

Learning media is a communication device that can be used to facilitate the delivery of learning material [2][3]. Through the use of learning media, it is expected that the contents of learning materials can be easily conveyed to students. Learning media can be a means of connecting or mediating messages (material content) from lecturers to students. The use of media can increase learning motivation and influence students' cognitive abilities [4][5].

Learning media developed in the research are flash on light material. The media was created to visualize the concept of shadow formation in concave and convex mirrors accompanied by animation and experimental simulation. This learning media is expected to help facilitate students in learning the concept of light. This is because understanding students' concepts of material will be the basis for achieving good learning outcomes [6].
Through this flashlight media, students can learn on their own and repeat the material that is not yet understood because in this media interactive buttons are provided which make it easy to choose material. This can create a separate learning experience for students. The learning experience can help to grow student motivation [7].

The purpose of this study was to determine the response of students to flashlight media that had been developed. Student responses used include the media display, interests, and conceptual understanding of students. The results of the student response will then be used as an evaluation material for the media that has been developed.

2. Methods
This research is a research on the development of flashlight learning media. The media development model used is ADDIE. The sample of this study was 36 students. Samples were taken by purposive sampling technique that is sampling design based on certain considerations. To measure the student's response to the learning media developed, the student response questionnaire was used which consisted of three indicators, namely interest, conceptual understanding, and display of learning media. Questionnaire student responses are arranged using a Likert scale with four measurement scales, namely very good, good, not good, and very bad. The grading of positive statements is 4 (very good), 3 (good), 2 (not good), 1 (very bad) and the assessment of negative statement items is 1 (very good), 2 (good), 3 (not good), 4 (very bad).

Student response questionnaire data that has been collected is then analyzed descriptively statistically and analyzed by each student response questionnaire indicator. The criteria for evaluating student questionnaires are presented in Table 1.

| Interval          | Category        |
|-------------------|-----------------|
| 75% ≤ X ≤ 100%    | Very good       |
| 50% ≤ X < 75%     | Good            |
| 25% ≤ X < 50%     | Not good        |
| 0% ≤ X < 25%      | Very bad        |

3. Results and Discussion
This study aims to determine the response of students to the development of flash learning media Light using student response questionnaire instruments. Data based on student response questionnaires were then tabulated and analyzed descriptively statistically. The results of the descriptive statistical analysis of student responses are presented in Table 2, while the histogram of student responses is presented in Figure 1.

| Descriptive statistics | Category |
|------------------------|----------|
| Statistic              | Value    |
| Mean                   | 81.33    |
| Std. Deviation         | 5.96     |
| Minimum                | 69.17    |
| Maximum                | 98.13    |
Figure 1. Histogram of student responses.

The results of the student questionnaire on the development of flash light learning media besides being analyzed descriptively statistically were also analyzed based on the achievement of the student response questionnaire level indicators. The student response criteria use the criteria found in Table 1. The results of the analysis of each student response questionnaire indicator are presented in Table 3.

Table 3. Analysis of student response indicator.

| No | Indicators           | Percentage | Category   |
|----|----------------------|------------|------------|
| 1  | Interest             | 85.94%     | Very good  |
| 2  | Conceptual understanding | 80.82%     | Very good  |
| 3  | Media display        | 77.22%     | Good       |
|    | Average              | 81.33%     | Very good  |

To clarify the results of the analysis, the average student answer results for each question in the student response questionnaire are presented in Figure 2.

Figure 2. Average answer for each question.

Based on Table 2, it is known that the average student questionnaire response to the development of flashlight media is 81.33%. These results based on the criteria in Table 1 are included in the very good
category. Students feel the usefulness of the media developed. This can be seen from the results of the acquisition of each student response questionnaire indicator found in Table 3.

Student's assessment of media display quality based on Table 3 is 77.2%. Students assess that the appearance of the media developed is good. The color composition used is harmonious so that the text can be read by students. The media display is also equipped with several light concept animations and also experimental simulations that are adapted to the level of cognitive development of students. According to Piaget, the age of 12 years and above is in the formal operational stage [3], so that in this case students can be invited to think abstractly. Therefore, in this media students are asked to analyze the nature of the shadows that occur in the experiment simulation work. This is so that students can discuss groups to analyze the nature of the shadow formed so that learning becomes active and fosters students' interest in learning.

The interest of students to learn to use the media developed at 85.94% is included in the very good category. Students feel motivated to learn to use animated media that have been developed. For example, in statement number 1 related to computer animation media, it provides motivation to learn and statement number 7 about interest in conducting experimental simulations in this computer animation media, students answer with very good categories as seen in Figure 2 with the result of the statement number 1 is 97,2 and statement number 7 is 88,2. This is in line with the research of Fitriyani & Wiyatmo, which states that students tend to be interested in learning to use audio visual media [8]. In addition, the results of Rosen's research also state that there is an influence of animation-based learning on learning motivation [9]. The use of learning media can make students interested and not experience boredom in learning [10].

The function of learning media in this case is to grow the motivation of students to learn. The use of media such as animation and simulation can motivate students to learn [11][12]. Motivation is an urge in you to learn. With the high motivation of students to learn Physics, it is expected that student learning outcomes will also be better. Learning motivation will optimize the potential of students in learning [13].

Based on Table 3 it is known that the conceptual understanding of students' after learning to use the developed media at 80.82% is included in the very good category. The media developed can help students understand the concept of light. For example, in item statement number 9 related to the material presented in computer animation media, it can be easily understood and the statement number 11 about computer animation media provides more in-depth knowledge about light material, students answer with very good categories as seen in Figure 2 the result of statement number 9 is 85,4 and statement number 11 is 84,0. This is in accordance with Beydogan's research that the media influence the understanding of concepts and student learning outcomes [14]. Conceptual understanding is the ability of students to understand material both theoretically and applications in everyday life [15]. Understanding good concepts will play an important role in students' cognitive learning outcomes [16].

The function of the media in this case is as a tool to convey messages in learning [17]. In this case, it means that the media functions as aids (scaffolding) for students to visualize the concept of shaping the mirror so that students can easily understand it [18]. Media visualization can help students process subject matter into the memory of student memory [19]. This is in accordance with the theory of information processing from Gagne that in learning information processing occurs and the media can function as coding to help remember the material [20]. According to Gagne, learning activities occur in the process of receiving information (subject matter) [21], which will then be processed so as to produce output in the form of learning outcomes. Student learning outcomes are expected to increase after learning using flashlight learning media.

4. Conclusion
The results of this study can be concluded that the student response to the development of flash light learning media is very good with an average percentage of 81.33%. Based on these results it can be said that flash light learning media both in terms of media display, interest, and conceptual understanding of student are included in the very good category. Learning media developed can motivate and foster an
understanding of students’ concepts. Even so, in this learning media, there are still a number of things to be added, including the conceptual understanding test questions that need to be included in the media and also the need for additional sounds. Hope in the future so that learning media can be continued for other material.

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