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# The development of interactive learning media with lectora inspire in gas kinetic theory subject to improve the result and students' interest of the eleventh grade students of senior high school

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**Abstract.** Education has an important role in the life a nation or a country. It is expected to become the main pillar of the nation in improving the quality of human resources in mastering the various branches of skills and expertise in accordance with the development of science and technology, especially in the field of physics. The use of interactive media that integrated with digital media including electronic combination of text, graphics, video, and sound. The aim of this study is to know the feasibility and the effectiveness of the application of interactive media with Inspire Lectora to increased result and students' interest of class XI Senior High School. The method used is Research and Development with the development model of DDD-E (Decide, Design, Develop, and Evaluate). The design of this research uses ex-post facto. This developed interactive media is presented and applied by a software named Inspire Lectora, the interactive media development product presented online aided by web. The research subjects are all of the ninth grade science students of Samarinda 6th State Senior High School which is located in Samarinda, East Borneo. Developed interactive media is eligible to be applied in this Senior High School. Developed interactive media is considered to be effective to measure the result improvement and students interest in the subject of the gas kinetic theory.

## 1. Introduction

Quality of approved physics education in question is able to master various branches of skills and expertise that are in accordance with the development of science and technology, especially in the field of physics. Unfortunately, physics lessons are still considered by some students as lessons that are not interesting, difficult to understand and are often considered as boring lessons. There are many factors behind this, including the lack of motivation and activeness of students in the Physics learning process and inappropriate use of media during the lesson. Examining the current trends in social work education reveals a variety of opportunities and challenges such as the use of online program and social media that lead to what we are calling digitally mediated social work education (Jimmy).

Another previous research conducted by [1] regarding the use of Lectora Inspire software as an interactive learning media had concluded that the program was effectively used in learning activities, because it was relatively easy to apply and did not require sophisticated programming languages. By



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using Lectora Inspire, the subject matter can be designed as attractive as possible. It can display videos and animated images related to the subject matter. The study had not shown the percentage of students' interest and learning outcomes. The interactive learning media used in this study did not focus on the certain subject matter from the material being delivered. The use of by teachers to improve student learning [2].

In fact, physics lessons are still considered by some students as lessons that are not interesting and difficult to understand and are often considered as boring ones. There are many factors behind this, including the lack of motivation and activeness of students in the physics learning process and inappropriate use of media. The subject of the kinetic theory of gases was examined in this study because it was assumed that students needed practical interactive learning media to independently study the material given by the teacher in face to face, especially to practice the questions independently [3].

Interest according to the term of language (etymology), is the effort and willingness to learn (learning) and look for something. In terminology, interest can be defined as desire, liking and willingness to something. Interest is the driving force that is believed to be effective in the learning process. Therefore, teaching should provide a greater opportunity for the development of the interest of a student. Interest is closely related to feelings of like or dislike, and between interested or not interested [4] and [5].

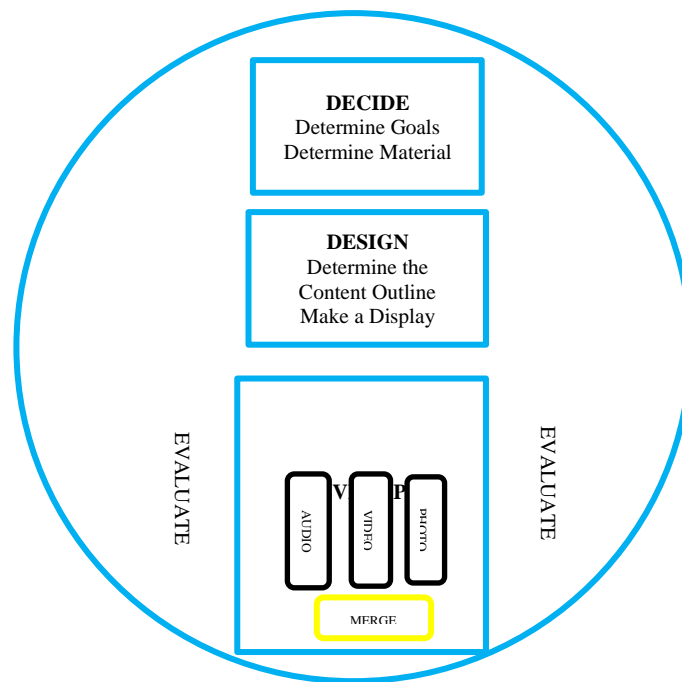
The abilities that a person has after he/she receives the learning experience. Learning outcomes have an important role in the learning process. One of them is to provide information to the teacher about the progress of students in an effort to achieve their learning goals through learning activities. Learning outcomes are divided into three types, namely: 1) skills and habits, 2) knowledge and understanding, and 3) attitudes and ideals that each group can be filled with material in the school curriculum [5].

Learning outcomes can be explained by understanding the two words that make it up, namely "results" and "learning". Understanding the results (product) refers to an acquisition due to an activity. Production results are obtained from due to the existence of activities that change materials (raw materials) into finished goods. The same thing applies in limiting the term crop yields, sales results, development results, including learning outcomes. In the input-process-outcome cycle, results can be clearly distinguished from inputs due to changes in processes. Similarly, learning is a process of individuals who interact with the environment to get changes in their behavior [7,8]. These aspects are: 1) cognitive aspects, namely those relating to new introduction or recalling (memorizing) a knowledge to develop intellectual abilities; 2) affective aspects, namely those related to the generation of interests, attitudes or emotions as well as respect for values or norms; and 3) psychomotor aspects, namely teaching that is skillful or that shows movement (skill) [9].

Lectora inspire is a software that can be used by educators as a mean in developing learning media. Its product called as multimedia learning. The rapid development of technology has allowed the integration of multimedia technology into teaching-learning process, and multimedia provides a constructivist learning environment in which students can solve problem by means of self-exploration, collaboration, and active participation. Through multimedia, it is expected that reciprocal relationship between teacher and students can be created [10, 11].

## 2. Methods

Used in this study is development research or Research and Development with procedural models. Research and development methods is a research method used to produce certain products, and then testing the effectiveness of these products. The development model was adopted through four phases, namely 3D and 1E [12], is as follows:



**Figure 1.** Steps of the DDD-E Mode

The research design used was ex post facto research. Non-experimental or ex post facto research is a method that is widely used in situations faced by many educational studies. The subjects of this study were all of the ninth grade science students of Samarinda 6<sup>th</sup> State Senior High School which totally consisted of 3 classes in 2018/2019 academic year, with each class consisting of 36 students so that the total students were 108 students.

Validity of the test in the form of multiple choices using product moment correlation. Product moment correlation equation with rough numbers can be counted by using formula [13] as follows:

$$r_{XY} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

with,

$r_{XY}$  = The correlation coefficient between X and Y

$\sum X$  = The number of correct answers for each item in question

$\sum Y$  = The number of correct answers for each student

$\sum X^2$  = The sum of squares of the item scores

$\sum Y^2$  = The sum of squares of the total score

$\sum XY$  = The number of multiplications between item scores and total scores

Reliability of the question instrument is determined using the Cronbach alpha formula,

$$r_{11} = \left( \frac{n}{n-1} \right) \left( 1 - \frac{\sum s_i^2}{s_t^2} \right)$$

with,

$$\begin{aligned} r_{11} &= \text{instrument reliability} \\ n &= \text{the number of questions} \\ \sum s_i^2 &= \text{Amount of item variance} \\ s_t^2 &= \text{Total variance} \end{aligned}$$

Cronbach's alpha equation is known, so that it can be seen the criteria of reliability coefficient, such as the following table, classification of reliability coefficients [13].

**Table 1.** Classification of reliability coefficients

Reliability Coefficient (r)	Criteria
$0,00 \leq r \leq 0,20$	Very Low
$0,20 \leq r \leq 0,40$	Low
$0,40 \leq r \leq 0,80$	Moderate/Sufficient
$0,60 \leq r \leq 0,80$	High
$0,80 \leq r \leq 1,00$	Very High

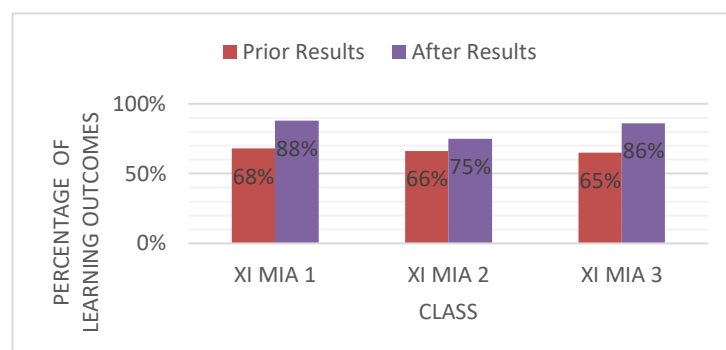
### 3. Results and Discussion

Development research that aims to produce interactive learning media by using the software named Lectora Inspire. By applying the design stages of making learning media, physics learning media are produced by using Lectora Inspire within the subject of the theory of kinetic gases. This interactive learning media was applied to the eleventh grade science students of Samarinda 6<sup>th</sup> State Senior High School to assist students in learning the kinetic theory of gases.

Observations were made to the Samarinda 6<sup>th</sup> State Senior High School which was used as the research location. This is done to find out the material to be discussed along with the objectives of the study. This school needs the latest methods and teaching materials for the subject of the theory of kinetic gases.

Process of developing the media is done by varying the audio or image according to the subject matter of the kinetic theory of gases. The editing stage is then carried out in the process of developing the interactive learning media.

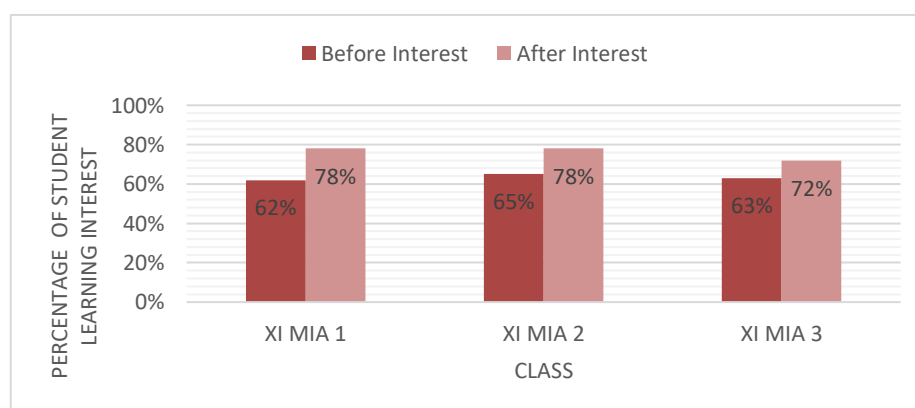
Mastery and improvement of student learning outcomes are displayed in the following graph based on each class.



**Figure 2.** Increase Percentage of Student Learning Outcomes

The acquisition of student learning outcomes is in accordance with previous research conducted by [1]. The results of the study stated that the use of Lectora Inspire as an interactive learning media was effectively used in learning activities.

Interest in student learning in each experimental class in terms of the acquisition of scores before and after the implementation of learning using the interactive media named Lectora Inspire displayed on each of the following graphs:



**Figure 3.** Increase Percentage of Student Interest

The acquisition of student learning outcomes is in accordance with the research of interactive learning media conducted by [14] which is located at SMK Negeri 1 Karanganyar. The Lectora Inspire learning media can increase students' learning interest by giving a significant influence.

#### 4. Conclusion

Based on the result of the study in the form of questionnaire analysis that has been carried out, the interactive media developed by this researcher is declared to be feasible, so it can be stated that the interactive media used is feasible as an interactive multimedia equipment in physic classes.

Based on the results of the study it was known that the results and interest in learning of the students experienced a significant increase. This can be seen in the graph presented, so that it can be said that interactive media developed effectively in increasing the results and the interest of student in learning within the subject of the kinetic theory of gas.

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