The effectiveness of Lectora Inspire media assisted guided inquiry method on the students' critical thinking skill in the science nature: a case study at gugus Diponegoro elementary schools Semarang

F Reffiane\textsuperscript{1,2,*}, R S Iswari\textsuperscript{1}, and P Marwoto\textsuperscript{1}

\textsuperscript{1}Postgraduate Universitas Negeri Semarang, Indonesia
\textsuperscript{2}Universitas PGRI Semarang, Indonesia

*Corresponding author: finereffiane@upgris.ac.id

Abstract. Lack of participation and motivation of the students in the learning process is characterized by many inactive students in science learning activities such as no tasks during the learning process. Lectora Inspire is able to create online training courses, assessments, and presentations quickly, effectively, and efficiently. This study aims to determine the effectiveness of media-assisted Lectora Inspire guided inquiry method of the critical thinking skills of students who applied in science subjects in elementary class V Diponegoro cluster, Semarang. The technique used in this research is the experimental method. This study design using by the right experimental design of pretest-posttest control design. The research data in the form of learning outcomes fifth-grade students at three elementary schools in the city, with a total number of 60 students on calculations for comparative testing an experimental class problem-solving ability by media treatment Lectora Inspire assisted guided inquiry method to control class with the conventional model. This means there is an increase. Further calculations were made using two test samples separated or comparisons. Thus, it could be concluded that the students' critical thinking skills in the classroom of material water cycle experiment better than the control class.

1. Introduction

The realization of good quality education requires a big effort to always improve the quality of education. A teacher should be able to create meaningful learning (meaningful), a student does not only learn to know something (learning to know) but also learn to do (learning to do). Learning through experience (learning by doing) in the form of exploration and manipulation will make the student easy to remember what did learned for a long time (long-term memory).

Low student participation in the learning process is characterized by there are many inactive students in each learning activity, especially in the context of science subject. Moreover, the low leaning motivation of students is caused by the students did not finish their assignment during learning process. Thus, the completeness of student competency has not been optimal yet. There are still many students find difficulties in completing and understanding the concept of science.

All this time, the big problems were caused by inappropriate learning method that used. Teacher tend to use conventional learning in which it was lack of media and so monotonous for students. Teachers only talked and sometimes told a story. They did not make use of learning media that was provided by the school, such as using computer for science learning activities [1]. Thus, teacher should make a new innovation for learning media. The use of learning media will make students are more excited with the learning process. Here teachers still tend to give a lecture.
Based on the facts above, it needs to apply innovative learning by using *Lectora Inspire* media. According to expert, *Lectora Inspire* is authoring tool for the development of e-learning content developed by Trivantis Corporation. *Lectora Inspire* is able to create online training courses, assessments, and presentations quickly, effectively, and efficiently. In addition, sased on these basic thoughts, it becomes a reference for implementing video-assisted learning with *Lectora Inspire* and it is expected to improve critical thinking skills and help learners understand the material.

2. **Methods**

2.1. **Theoretical Review**

The theories used in this study include:

2.1.1. **Effectiveness**

According to Shulman effectiveness is the ability to select the destination or the right equipment to achieve the goals set. The Effectiveness can be defined level of success that can be gained from a particular manner or by certain business objectives to be made [2].

2.1.2. **Lectora Inspire**

*Lectora* is authoring tool for the development of e-Learning content developed by *Lectora Inspire*. It is able to create online courses quickly, effectively, and efficiently. Its founders are Timothy D. Loudermilk in Cincinnati, Ohio, the USA in 1999[3].

Scope *Lectora Inspire: Flypaper for Lectora* - makes creative and engaging learners gram by adding flash animations, transitions, and special effects, *Camtasia for Lectora* - create professional tutorials to capture video, Flash animations or 3D design software easily. Fun edit video, audio, transitions, etc., *Snagit for Lectora* - capture what’s on the desktop to make the image. Equipped with a callout, etc.

2.1.3. **Lectora Integrator**

Additional product (Add-ons) that Lectora Integrator for Microsoft Powerpoint. By adding Lectora Integrator, the user can directly change the PowerPoint presentation into Lectora.

*Lectora* is able to create websites, interactive e-Learning content, and presentation of a product or a company profile. *Features* provided *Lectora Inspire* are very easy for novice users to create learning multimedia (audio and video), for a teacher *Lectora Inspire* can facilitate learning, *Lectora* provides a media library that helps the user.

2.1.4. **Guided Inquiry Method**

The method used in this research was guided inquiry (guided inquiry). The Inquiry means inquiry, inspection or investigation. It means a process of guided inquiry learning activities that involve all students' ability to find and investigate a problem systematically, logically, and analytically. Therefore, the guidance of their teachers can formulate their findings with more confidence. There are three stages of Inquiry-based learning process [4] namely, as follows:

The first stage is discovery learning. Teachers write and process problems, but they allow students to identify alternative outcomes. The second phase is guided inquiry (Guided Inquiry), the teacher asked the students to determine the issue and settlement and the process. The third stage is an open inquiry (Open Inquiry), the teacher gives context while students identify problems and solve them. Research by Callahan and Dopico[5] indicated that there are many effects of guided inquiry learning model to improve students’ science process skills and mastery of science concepts [6].

Step-by-step guided inquiry method, namely the formulation of the problem (orientation of students in the question), draw up hypotheses (organized of students in the study), collecting data (guided individual or group), analyzing the data (present or present the results of activities), and concludes.

The advantages of guided inquiry method are helping learners to develop preparedness and mastery of skills in cognitive processes; learners acquire knowledge individually, so it can be understood and settled in his mind; they can generate motivation and passion of learners to study harder; providing opportunities for developing and developed according to the abilities and interests of each; strengthening and increasing the confidence in yourself to find yourself because the learning process is centered on the participant with the teacher's role is very limited.
2.2. Experiments
This is a research study empirically qualitative. The method used in this research was the experimental method. This study designs using by True Experimental Design of pretest-posttest Control Design. The sampling technique used in this research is by using random cluster sampling.

The research was conducted on V class of three elementary schools in the city, namely Bugangan SDN 03, SDN 02 and SDN Rejosari 03, with a total number of 60 students (30 students of the control class and experimental class of 30 students).

Data collection techniques in this study are the test, interview, observation, documentation. Data analysis techniques used in this study are as follows: Preliminary Data Analysis (Normality test and Homogeneity test), Final Data Analysis (Normality test and Homogeneity test).

3. Results and Discussion
This study used guided inquiry learning methods in the final stage of normality test was repeated using a posttest. Based on the calculations, the experimental class \( L_0 < L_{table} \) namely 0.149 < 0.16176 and control classes \( L_0 < L_{table} \) namely 0.149 < 0.16176 with \( n = 30 \) and a significance level \( \alpha = 5\% \), we conclude that the class of normal distribution (Table 1).

| Table 1. Lectora Inspire Data |
|-------------------------------|
| Sample | Pre Experiment | Post Experiment |
|-------|----------------|-----------------|
| X1    | 70             | 80              |
| X2    | 70             | 85              |
| X3    | 70             | 85              |
| X4    | 65             | 85              |
| X5    | 60             | 88              |
| X6    | 70             | 83              |
| X7    | 70             | 85              |
| X8    | 70             | 85              |
| X9    | 70             | 85              |
| X10   | 70             | 85              |

The final data analysis techniques was conducted to test individual mastery learning. Calculation of mastery learning of individuals was done by examining one sample t-test, the obtained critical thinking skills of IPA using by water cycle learning material of method guided inquiry resulted in the average value of the experimental class of 90.733 while the control class 73.200 and completeness criteria minimum (KKM) 65, \( t = 7.2384 \) experimental class and control class \( t = 7.1761 \) with \( n = 30 \) and table = 2.0322. Based on the results of these calculations are known \( t > t_{table} \), so it can be concluded that the ability to think IPA KKM material critically reaches the water cycle of 65. This is because the guided inquiry learning method assisted Lectora that inspire problem-solving ability of students achieved the maximum.

Based on calculations for comparative testing an experimental class problem-solving ability by media treatment Lectora Inspire assisted guided inquiry method to control class with the conventional model [7].

Results posttest experimental class students earned an average of 84.40 while in the posttest control class gained an average of 74.07. This means there is an increase. Further calculations were made using two test samples separated or comparisons. Based on these results, obtained \( t > t_{table} \) ie, \( 7.2384 > 2.0017 \), then \( H_a \) accepted, and \( H_0 \) is rejected, so it can be concluded that the students' critical thinking skills in the water cycle material of experiment class better than the control class.

4. Conclusion
Lectora Inspire media assisted guided inquiry learning methods effective against critical thinking skills IPA material in class V SDN Diponegoro Semarang. Mastery learning on the test results showed that the critical skills of thinking students in grade V SDN Diponegoro Semarang who guided inquiry learning methods reach KKM 65.
References

[1] Radloff J 2016 *Cult Stud Sci Educ* **11** 527
[2] Shulman L 1987 *Harvard Ed Rev* **57** 1
[3] Florez E G, Pineda J E and Garcia NM 2012 *Profile Issues Teach Prof Dev* **14** 113
[4] Lalima D and Dangwal K L 2017 *Univers J Educ Res* **5** 129
[5] Callahan B E and Dopico E 2016 *Cult Stud Sci Educ* **11** 411
[6] Dejonckheere P J N, De Wit N, Van De Keere K and Vervaet S 2016 *Int Electron J Elem Educ* **8** 537
[7] Gómez J S B 2016 *Profile Issues Teach Prof Dev* **18** 167