

ARTICLE

The Effectiveness of Integrated PowerPoint-iSpring Learning Media Prompting Questions on Element Periodicity Material for Learning Outcomes of Student in Class X SMA/MA

Sofia Anggraini^a, Guspatni^b

^aDepartment of Chemistry, Faculty of Mathematics and Natural Science, Universitas Negeri Padang, Indonesia

^bDepartment of Chemistry, Faculty of Mathematics and Natural Science, Universitas Negeri Padang, Indonesia

*Corresponding email:

ABSTRACT

The background of this research is the availability of PowerPoint-iSpring learning media integrated with prompting questions on material periodicity of elements that have been tested for validity and practicality, but have not yet been tested for effectiveness. So a study was conducted to test the effectiveness of the Integrated PowerPoint-iSpring Learning Media Prompting Questions on the Periodic Nature of Elements Material on Student Learning Outcomes in class X SMA/MA. The type of research used is a Quasi Experiment with a Non Equivalent Control Group Design. The population consisted of students of class X SMAN 5 Solok Selatan. The sampling technique used purposive sampling with homogeneous sampling criteria and the selected class was Class X E.3 as the experimental class and Class X E.1 as the control class. The instruments used were questionnaires and student learning achievement tests in the form of 20 multiple choice questions. Data analysis used the N-Gain test and the hypothesis test used the Mann-Whitney test. Based on data analysis, it was found that the N-gain test for the experimental class was higher than the control class with moderate criteria. The hypothesis test obtained a value (sig) <0.05, namely sig (2-tailed) 0.0001. The data analysis concluded that the hypothesis was accepted, meaning that PowerPoint-iSpring learning media integrated with prompting questions was effective in improving student learning outcomes in class X SMA/MA.

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Corresponding Author :

Sofia Anggraini, Guspatni

Faculty of Mathematics and Natural Science, Universitas Negeri Padang, Indonesia

Email : anggrainisyofi91@gmail.com

1. Introduction

The periodicity of elements is one of the main subjects of chemistry that is studied in class X SMA/MA. This material has abstract concepts which mean that not all of the subject matter can be sensed. Students experience difficulties in understanding material periodicity of elements and misconceptions occur in learning, this occurs due to a lack of variation in teaching methods [1].

Based on the results of interviews with chemistry teachers and students conducted [2] at SMAN 2 Payakumbuh, SMAN 7 Padang, and SMAN 8 Padang, it was found that students tend to memorize concepts and do not fully understand the periodicity of elements. In line with that, revealed that the average percentage of students' mastery of concepts in material periodic properties of elements was 66.38% [3]. Revealed that the majority of students' mastery of the concept of periodic element material is still low [4].

The distribution of questionnaires to chemistry teachers and students at SMAN 5 Solok Selatan showed that students were not fully active in the learning process so that learning outcomes were not maximized. Several schools have used media textbooks, LKPD, and PowerPoint. The PowerPoint used by the teacher in the learning process is still in the form of text and images, so that students tend to have difficulty understanding concepts. In fact, the use of PowerPoint functions should be maximized as a learning medium.

One means that can help students understand the material is the use of learning media. Learning media is one of the most influential aspects in the learning process [5]. Media helps students understand the material [6], overcomes boredom and can increase student learning motivation [7].

PowerPoint is a presentation application program under the auspices of Microsoft Office. PowerPoint as a presentation medium that is displayed with multimedia stimuli designed in such a way that it can be used according to its function as a learning medium [8]. The application of PowerPoint media in the learning process was quite effective in increasing student motivation, activation and learning outcomes [9].

iSpring is learning software that is integrated with Microsoft PowerPoint software. This software is a tool that can convert presentation files into flash form. With iSpring the resulting teaching materials can be more interactive and interesting. The use of iSpring-assisted multimedia effectively increased student motivation and learning outcomes. This is because the resulting media is able to make the learning process more interesting and fun [10].

Giving prompting questions in PowerPoint can be applied using iSpring media. iSpring itself makes it easy to make quizzes with various types of questions and makes presentation files

into more interesting and interactive animated media by inserting various forms of media such as text, images, animation, audio, video and can record can record and synchronize presenter videos by adding flash and YouTube videos [11].

Currently, PowerPoint-iSpring learning media integrated with prompting questions developed are available. This media was developed using a 4D model and has been tested for its validity and practicality but has not yet been tested for effectiveness so it cannot be spread in a wide scope. Therefore, the authors are interested in conducting research by formulating the title "Effectiveness of Integrated PowerPoint-iSpring Learning Media Prompting Questions on Material Periodic Properties of Elements on Student Learning Outcomes in Class X SMA/MA."

2. Methodology

The type of research to be carried out is in the form of experimental research with the research design used in the form of quasi-experimental design, namely the Nonequivalent Control Group Design. Pseudo-experiment is a development of the actual experiment (True Experimental Design) which is difficult to do.

The instrument used in this research is the learning achievement test. A test is a tool or procedure used to measure a person's ability by using predetermined methods or rules [12]. This test is in the form of objective questions of 20 items which are tested in the experimental and control classes at the beginning and at the end of the lesson. The instrument used is an instrument that has been developed by Nurfadilah & Andromeda [13]. The data analysis technique used is the N-Gain test and the Hypothesis test.

Table 1. N-Gain Criteria

N-Gain	Criteria
$g \geq 0,7$	Tall
$0,7 > g > 0,3$	Currently
$g \leq 0,3$	Low

Source: Hake, 1999 [14].

3. Results and discussion

The N-Gain test was carried out aiming to determine the increase or decrease that occurred before and after learning. The results of the N-Gain test for the experimental and control classes can be seen in the table below:

Table 2. N-Gain Test Sample Class

Class	Average N-Gain	Category
Experiment	0.58	Currently
Control	0.21	Low

From the table above it can be seen that the results of the N-Gain test in the experimental class obtained a value of 0.58, where this value was categorized as moderate, while in the control class a value of 0.21 was obtained in the low category.

The normality test was carried out aiming to see whether the research data obtained was normally distributed or not in the sample class. The normality test uses the Kolmogorov Smirnov test. The decision making criteria is a significance value (sig) of 0.05. If the value (sig) < 0.05 then the data is not normally distributed, whereas if the value (sig) > 0.05 then the data is normally distributed [15].

Table 3. Sample Class Normality Test Results

Class	α	N	(Sig)		Decision
			Kolmogorov Smirnov	Shapiro-Wilk	
Sample	0,05	35	0,006	0,005	Not Normality distributed

From the results of the normality test above, it was found that the significance value (sig) of the data was good for the Kolmogorov-Smirnov and Shapiro-Wilk tests <0.05 , so the decision was made that the data was not normally distributed.

The homogeneity test was carried out aiming to find out whether the research data had the same variance or not in the sample class. For decision making criteria, if the significance value (sig) > 0.05 , the data is homogeneously distributed. Meanwhile, if the significance value (sig) < 0.05 , the data is not homogeneous.

Table 4. Sample Class Homogeneity Test Results

Sample Class	α	(sig)	Decision
	0.05	0,064	Homogeneous

Based on the results of the homogeneity test in the sample class above, a significance value (sig) is $0.064 < 0.05$. This means that the sample class learning outcomes data have variants that are homogeneous.

Hypothesis testing was carried out after the normality test and homogeneity test were completed. Once it is known that the data is not normally distributed and has homogeneous variants, a hypothesis test is performed using the Mann Whitney test. Basis for decision making Mann Whitney test if the Asymp Sig value < 0.05 then the hypothesis is accepted and if the Asymp Sig value is > 0.05 then the hypothesis is rejected.

Table 5. Sample Class Hypothesis Test Results

Sample Class	α	Asymp Sig (2-tailed)	Decision
	0,05	0,0001	Hypothesis accepted

Based on the table above, it can be seen that the AsympSig (2-tailed) value of the experimental class is $0.0001 < 0.05$ with the hypothesis decision being accepted. Thus it can be said that learning using PowerPoint-iSpring can improve student learning outcomes significantly.

Judging from the value of statistical significance there is a difference in improving student learning outcomes between the experimental class and the control class. Where the learning outcomes of the experimental class are higher than the learning outcomes of the control class. However, if seen from the results obtained by the sample class, there are still many students who have not reached the Minimum Completeness Criteria (KKM) that have been set. This was caused by limited time, lack of motivation for students to study back at home, and lack of student literacy in understanding the questions given (pretest and posttest) and this became an obstacle in research. Another obstacle is that in the control class students are less able to find concepts if they only use PowerPoint, so the teacher has to explain the material again. Therefore it is expected that students repeat the learning that has been obtained from school in order to get maximum results.

From the explanation above, it can be concluded that there was an increase in student learning outcomes in the experimental class using PowerPoint-iSpring media compared to the control class, which did not use PowerPoint-iSpring in the learning process. So that the availability of PowerPoint-iSpring learning media on material periodicity of elements effectively improves student learning outcomes in class X SMA/MA

4. Conclusion

Based on the results of the research that has been done, it can be concluded that PowerPoint-iSpring learning media integrated with prompting questions in learning the periodicity of elements is effective in increasing student learning outcomes in class X at SMAN 5 Solok Selatan. This can be seen from the learning outcomes between the experimental class that uses PowerPoint-iSpring media in higher learning with an N-Gain value of 0.58 compared to the control class which is in learning without using PowerPoint-iSpring media with an N-Gain value of 0.21.

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