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The effectiveness of the quizizz interactive quiz media as an online learning evaluation of physics chemistry 1 to improve student learning outcomes

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Abstract. This study uses a quantitative approach with experiment. The population in this study were all students of the Faculty of Chemistry Education Teacher Training and Education (Guidance and Counseling) Indonesian Christian University (UKI), which follows the course of Chemical Physics 1. The purpose of this study was to determine the effectiveness of an interactive quiz quizizz as a medium of learning on-line evaluation of the course of Physical Chemistry 1. Data collection techniques used is a test instrument as much as 10 multiple-choice questions that have been testing the validity of the expert validator. Data analysis technique used is the non-parametric Wilcoxon Signed Rank Test. Use IBM SPSS 23. From the analysis of data obtained asymp. Sig. (2-tailed) was 0008, of which 0.008> 0.05. Because the value is less than 0.05, it can be concluded that the use of an interactive quiz quizizz as a medium for on-line evaluation of learning in the subject of physical chemistry 1 effective against student results.

1. Introduction

The development of science and technology, is now becoming an interesting discussion on education. Various scientific meetings being actively seek and share information about the industrial revolution 4.0. The field of education to obtain such information from all components of education. Overall education components are interlinked in an integrated manner to achieve the goal of national education is the national education system [1]. According Sista, in meeting some of the national education goals, the first thing people need is to get quality education opportunities [2].

Various attempts to improve the quality of education has been carried out, among others, through various training and improvement of qualification of teachers, the provision and improvement of facilities / infrastructure of education, as well as improving the quality of management of schools and colleges [3]. Nevertheless, various indicators of quality of education has not shown significant improvement. International Association for Evaluation from Educational Achievement (IEA) consists of the center of government research and national research institutions throughout the world whose purpose is to investigate the problem of general education among countries. Since in early 1958, the IEA did more from 30 research studies on cross-national achievements. The regular study cycle includes learning in elementary school subjects. An example is Trends in International Mathematics and Science Studies (TIMSS) and Progress in International Reading Literacy Studies (PIRLS) [4]. Every five years since 2001, PIRLS has provided important information to participating countries key influencers in education to make informed and directed decisions. Such decisions can vary in scale,

from cross country to individual class, but those decisions clearly shape the future of reading reading the younger generation [5]. The study illustrates that in the race PIRLS reading attended by fourth-grade elementary school students from 45 countries from both developed and developing countries, Indonesian students rank 41, it also can be made measurement of the quality of education in Indonesia [6].

Evaluation of learning as one of the efforts in increasing measure of the ability of students in learning, being a general overview of the quality of education. Many learning evaluation techniques can be used to measure the quality of education through the learning process [7]. Evaluating the ability of cognitive, affective and psychomotor learners can be done manually or online [8].

A manual evaluation with an evaluation instrument has many disadvantages. The weakness is that it takes time and cost quite a lot to manufacture the instrument, the selection of test items is quite troublesome question bank, the inspection process of evaluation with a printed instrument is quite complicated, so it tends to be boring, the processing of the score and providing feedback to respondents also psychologically complex and manual evaluation often cause anxiety in those tests [9]. The above conditions are urgently addressed. Evaluation of computer-based or on-line is expected to deliver results fast and accurate evaluation. Computer programs have practical applications that can be exploited and developed for the achievement of educational goals [10].

Research results with a title "Construction and Application of an Online Child Portfolio Assessment System", that the on-line evaluation tends to be accepted well by parenst and learners [11]. In the development of science and technology (Science and Technology), which focuses on the industrial revolution 4.0, a lot of media evaluation of on-line learning that has been developed and tested by researchers. Interactive Quiz quizizz is one medium of learning evaluation that has been used by several educators and researchers. Quizizz is education application that allows students to participate in classroom activities multiplayer fun [12].

Various studies and researches to utilize this media members a variety of inputs that can contribute to education [13]. Purba research results evaluation of learning by using quizizz help increase the concentration of learners. Kahoot an online learning evaluation which uses a principle similar to quizizz [14]. Irwan research results show that Kahoot! can be an alternative media interactive learning in higher education since proven to significantly improve student learning outcomes with F (1,58) = 0.001, p & lt; 0.05, which means that there is a difference between the control class and experimental class experimental class mean (SD = 13:33, SD = 3.30) higher than the control class (M = 10:50, SD = 2.81) [15]. Based on the description above, researchers analyzed the effectiveness of interactive quizzes Quizizz as a medium of learning on-line evaluation of the course Physical Chemistry 1.

2. Methodology of Research

This study uses a quantitative approach with experiment [16]. This research was conducted at the Indonesian Christian University, the Faculty of Education, Department of Chemistry Education. This study design refers to Sugiyono, namely: One group pre-test and post-non-control control Design [17].

Table 1. Research design

treatment group	T1	X	T2

information:
        T1: pretest
        T2: posttest
        X: Interactive Quiz Quizizz

The population in this research that students who follow courses of Chemical Physics 1. Samples selected by purposive sampling method, the sample selection technique with a specific purpose [18]. The number of samples in this study is the entire population, ie nine students of the third semester. The

instrument used was a multiple choice test that is used in the pre-test and post-test. Useful test to measure students' understanding of the material presented.

The data pre-test and post-test, test for finding out large gain and categories of learning outcome of each student. The maximum value for the test instrument presented is 100 [19]. By using test formula gain:

$$g = \frac{Spost - Spre}{Smax - Spre}$$

Information:
g = gain value
Spost = posttest scores
Spre = Score pretest
Smax = maximum score

Obtained the gain of each student and presented in Table 1 Value gain can be interpreted using the gain interpretation table below:

Table 2. Interpretation of the value of Gain

Percentage (%)	Category
80-100	Very Good
66-79	Good
56-65	enough
40-55	less
0-39	Very Less

The analysis is a non-parametric test test, Wilcoxon Signed Rank Test. Test analysis using IBM SPSS 23 [20].

3. Result and discussion

The results of the research presented in table 3 below:

Table 3. Research data

Code Name	Pretest	Posttest	Value Gain	Interpretation
M1	50	88	76%	Very Good
M2	46	82	67%	Good
M3	40	88	27%	Very Good
M4	50	82	64%	enough
M5	44	70	46%	less
M6	40	84	73%	Good
M7	46	88	78%	Good
M8	56	74	41%	less
M9	60	84	67%	Good
Average	49	81	65%	Good

Interpretation of the gain values in Table 3 above, that increase student learning outcomes exist at a level less, enough, good and excellent. The average value of the gain in this study is well interpreted, amounting to 65%. The research data in Table 3 was tested the hypothesis by using IBM SPSS 23. The results of this research hypothesis testing are presented in Table 4 below:

Table 4. Hypothesis Test Results Wilcoxon Signed Rank Test

Wilcoxon Signed Rank Test	Post - Pre
Z	-2.666b
Asymp. Sig. (2-tailed)	.008

Based on table 4 above can be seen that the value asymp. Sig. (2-tailed) was 0008, of which 0.008< 0.05. Because the value is less than 0.05, it can be concluded that the use of an interactive quiz quizizz as a medium for on-line evaluation of learning in the subject of physical chemistry 1 effective against student results.

Quizizz is an on-line assessment tool as multiplayer fun classroom activities that allow all students to train together with their computers, smartphones and I Pad [21]. This is one of the statements into the theory supporting this research. Learning is fun with using a computer or a smartphone or I Pad learners endorse an increase in the ability of learners.

4. Conclusions and Recommendations

Based on the results of data analysis in this study concluded that the use of an interactive quiz quizizz as media evaluation on-line learning in the subject of physical chemistry 1 effective against student results. Researchers suggest to the reader to utilize interactive quiz quizizz as media evaluation is on-line learning in other subjects.

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