The Effectiveness of Quantum Learning Method Technology-Based Assisted Learning Media Toward Students’ Learning Achievement on Indonesian Subject at Grade XII of SMAN 5 Batam

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Abstract: The research is motivated by lack of students’ achievement of grade XII at SMAN 5 Batam. It can be seen from the students’ test results which do not meet the minimum passing-criterion (KKM) set by the school based on 2013 curriculum. There are some problems in learning, they are (1) some students have lack of vocabulary, therefore it’s hard for them to express their ideas in writing. (2) media and methods used in learning aren’t varied, and (3) ) students don’t engage in learning process actively. The research is aimed at describing the influence of quantum method of technology-based assisted learning media toward students’ achievement in learning Indonesian. The subject of the research was student of grade XII at SMA Negeri 5 Batam. The research is expected to be able to establish a good relationship with SMA Negeri 5 Batam. The method used was quasy experiment by using treatment by block 2x2 designs. Population and sample of the research were students of grade XII at SMA 5 Batam. The research sample consisted of experiment and control group. The experimental and control group was students of grade XII IPA₁ and XII IPA₂ at SMA Negeri 5 Batam. Data were collected by using instrument, namely questionnaires and tests. Based on data analysis, it can be concluded that quantum method of technology-based assisted learning media influence student’s achievement. First, the students’ scores who were taught by the quantum method of technology-based assisted learning media were higher than the students’ score who were taught by using conventional method. Secondly, there was an interaction between the quantum method of technology-based assisted learning media and students’ learning achievement at grade XII of SMAN 5 Batam.

Keywords: Quantum learning method; learning media; learning achievement.

1. Introduction

Teachers need to think over about students’ problems in mastering language skill for Indonesian subject. Basically, learning of language skills is a process which involve interrelationships between teachers and students to achieve certain goals. This should be based on standards of competence and basic competences in curriculum. In addition, the methods and media used by teachers in learning Indonesian have not varied. It’s still generally dominated by conventional methods such as lectures, exercises, and eventually come to students’ assignments. Teacher-centered activities are one way teaching. Students just pay attention and make notes as necessary. Teachers are not fully active as facilitator and mediator during the learning process. It causes students to feel tired and bored in learning Indonesian.

Based on observations, the researcher found some problems in learning Indonesian. It is caused by lack of vocabulary. It makes students difficult to express his thoughts into a written text. In addition, students are also not trained to develop their creative ideas during the learning process. The other problem is media used in learning has not varied and students don’t engage in learning process actively. Therefore, innovative learning media needed to motivate students in learning Indonesian.
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which cover all aspects that are listening speaking, reading, and writing. Area that has a significant impact to the development of this technology is education, where it is basically as a process of communication and information from educators to students which contain effective information. The media can be used as a means of presenting ideas and interesting learning materials for students. Arsyad (2009: 4) concluded that the media is a tool that conveys learning messages. One of appropriate learning media used is a technology-based media. It can be in form of audio-visual media and the web.

Actually, without using technology-based media, learning process still can run as it is. However, students passively receive information especially related to theory. Learning outcomes are learning which is measured through academic activities in the form of tests or quizzes. The learning process only focused on teachers. Teachers can use the tools of technology as a learning media. The use of media is to accelerate the students’ understanding on learning materials. Previously, teachers used natural objects around us as learning media, but nowadays, teachers should be able to create innovative learning media during learning process. One of teacher competences is the ability to motivate students’ critical thinking. It is intended to make students compete in healthy atmospheres. It can be achieved the use of learning media. It is expected that teacher can stimulate student’s ability and help them to have a creative activity in learning process.

Through the language skills, it is expected that students are able to express their ideas and thoughts in a logical framework and systematic thinking. Indonesian skills are required in 2013 curriculum for SMA/MA level based on Permen Pendidikan dan Kebudayaan Nomor 69 tahun 2013. Related to this problem, it is necessary to have learning media to improve the learning process and students’ learning achievement at grade XII class in SMA Negeri 5 Batam. Technology-based learning media is appropriate to improve students’ learning achievement in Indonesian subject. Therefore, it is necessary to use audio-visual media and web. Web is one of internet network which allows users to access a variety of information such as text, images, audio, video, and so on. In this research, web gives opportunity for students to get learning materials and a variety of information about Indonesian topics. In addition, they can also interact with other students and their teachers.

Furthermore, Quantum Learning methods is needed in learning Indonesian. If the students don’t get a good achievement in learning, doesn’t mean that they failed, but they don’t find the appropriate way yet. Therefore, teachers need to facilitate and change the learning environment. In Quantum Learning methods, teachers should be able to provide the students’ learning success. Teachers do not merely translate the curriculum into the strategies, methods, techniques, and learning steps but teachers need to provide the students with the real needs. Therefore, teachers should be able to adjust the context of learning with learning environment and with regard to the learning content (Sanjaya, 2010: 3).

Based on these descriptions, it is important to do research in order to motivate the students to learn Indonesian. The application of learning media and quantum learning method is expected to be able to improve and increase students’ learning achievement for Indonesian subject at grade XII of SMA Negeri 5 Batam based on 2013 curriculum. Through technology-based learning media, students can understand the Indonesian material well. In accordance with these problems, the purpose of this study were (1) to describe the effectiveness of quantum learning method technology-based assisted learning media toward Indonesian subject at grade XII of SMA 5 Batam and (2) to describe the interaction between quantum learning method technology-based assisted learning media toward students’ learning achievement of Indonesian at grade XII of SMA Negeri 5 Batam.

2. Methodology

The research method applied is the experimental method. According Suwanda (2011: 2), an experimental research is experimental design with statistical analysis. The experimental research objective is to obtain or collect information in order to investigate the issues discussed. According to Suryabrata (2002: 33), the purpose of quasi-experimental research is to obtain information that is approximate to the information that can be obtained by actual experiment. It does not allow to control or manipulate all relevant variables. The design used was treatment by 2X2 block. Emzir (2009: 106) argues that the term factorial refers to the fact that the design involves several factors.
3. Results and Discussion

3.1. Result

The research was conducted based on the experimental research procedure. This experimental research is essential to see the learning achievement of Indonesian students by using quantum methods of learning and technology-based learning media. The research activities were held in three weeks. It was started from August 10, 2015 to August 29, 2015. The researcher distributed questionnaires to students. They are experiment and control group. Then, instrument which is in form of tests used to see the effect of quantum learning method technology-based assisted learning media toward students’ achievement at grade XII of SMAN 5 Batam.

The learning process was carried out for four meetings. One meeting consisted of two hours learning, i.e. 2x45 minutes (90 minutes). Researcher discussed about quantum learning methods used during the learning process with the teacher. Data collection is initiated by giving the questionnaires for each group. They were given on August 24, 2015. The first learning experiments were carried out on August 10, 2015, while the first lesson in control group was held on August 18, 2015. The second one was held on August 25, 2015. It was done for both groups. Then, the tests carried out for both group on August 28, 2015.

Experiment group used quantum learning method and technology-based learning media but control group didn’t use it. The learning process used conventional methods. It shows that teachers take dominant role. Students were more likely to listen to the teacher explanation about subject matter. Students were not divided into groups so that students were still busy with their activities. It can be concluded that learning was monotonous without the use of media and methods vary.

Table 1 described the result of test of Indonesian at grade XII student of SMA 5 Batam for the experimental and control groups.

<table>
<thead>
<tr>
<th>Formula</th>
<th>Experiment Group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>∑</td>
<td>3025</td>
<td>2415</td>
</tr>
<tr>
<td>N</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>( \bar{x} )</td>
<td>79.60</td>
<td>69</td>
</tr>
<tr>
<td>( S^2 )</td>
<td>112.67</td>
<td>136.47</td>
</tr>
<tr>
<td>S</td>
<td>10.61</td>
<td>11.68</td>
</tr>
<tr>
<td>Max</td>
<td>95</td>
<td>90</td>
</tr>
<tr>
<td>Min</td>
<td>60</td>
<td>50</td>
</tr>
</tbody>
</table>

Furthermore, there are two sets of data which will be described as follows. (1) Score of test results of experimental group. (2) Score of test results of control class. According to Azwar (2007: 126) states that descriptive analysis is intended to provide a description of the subject of research based on data variable to the subject of study. For more details, it will be described in the following sections.

Scores of students’ test results on experiment group

Based on the analysis of the students’ test results score, it can be described that the average value obtained for the experiment group is 79.60 with 38 samples. The maximum value obtained was 95 and the frequency was 5. The lowest value was 60 and the frequency was 2. The variance for experimental group was 112.67 and the standard deviation was 12.50. From the statistical analysis, it can be seen that the highest frequency was found in interval 90-95, the number was 11. The highest frequency percentage was 28.95%. The lowest frequency for the interval class was 66-71, 72-77, 84-89, the number was 5. The lowest percentage amounted to 13.1%. The frequency distribution of the experiment group students’ test results can be seen in the following histogram.
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**Figure 1.** Histogram Score of Test Results for Experiment group

**Student’s Test Results Score for Experiment group**
Based on the analysis of student’s test results score in control group, it can be described that the average value obtained was 69.00 with 35 samples. The maximum value was 90, the frequency was 2. The lowest value was 50 and the frequency was 3. The variance for experiment group was 136.47 and the standard deviation was 11.68. Based on the data analysis it can be seen that the highest frequency was found on interval 50-55 and the number was 7. The highest frequency percentage was 20%. The lowest frequency for class interval was 61-66, 67-72, and 85-90, the number was 4. The lowest percentage amounted to 11.42%. The frequency distribution on control group test results can be seen in the following histogram.

**Figure 2.** Histogram of Students’ Test Result Scores in control group

**Normality test of Students’ Test Result Scores in experiment group**
A normality calculation was conducted on student’s test results score for the experiment group. The formula used was Liliefors. From the analysis, it showed that for the experiment group $L_0$ was 0.1053, but $L_e(\infty) 0.05=0.1437$. From the result, it can be said that $H_0$ was acceptable. Therefore student’s test result on experiment group was normal because $L_0 < L_e$.

**Normality test of Students’ Test Result Scores in control group**
A normality calculation was conducted on student’s test results score for the control group. From the analysis, it showed that for the control group $L_0$ was 0.1222, but $L_e(\infty) 0.05=0.1437$. From the result, it can be said that $H_0$ was acceptable. Therefore student’s test result on control group was normal because $L_0 < L_e$.
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Variance Homogeneity test
Variance homogeneity test is performed to determine whether the students’ test results had a homogeneous variance or not. To find the homogeneity, it can be done by comparing the largest variance with the second smallest variance at a significance level of 5% with degree of freedom $dk=n-1$. The homogeneity test which was conducted was homogeneity of student’s test result score for both groups.

Variance Homogeneity test
Variance homogeneity test was conducted for both groups. The formulas used was $F$ testing. Tabulation test showed that the smallest variance was on experiment group and it was 112.67. The highest variance was on control group and the number was 151.98. $F_{hit}$ was 1.211 and $F_{tabel}$ was 1.795. It can be concluded that the students’ test result on both group had homogeneous variance because $F_{hit} < F_{tabel}$ and degree of freedom (dk=73) for both samples.

Research Hypothesis Testing
The testing hypothesis was done after finding the students’ test results score on Indonesian subject. Hypothesis 1 used $t$-test formula and hypothesis 2 used analysis of variance with $F$ formula.

Hypothesis 1
The hypothesis calculation was drawn in Table 2.

<table>
<thead>
<tr>
<th>No</th>
<th>Sample</th>
<th>$N$</th>
<th>$S_{gab}$</th>
<th>$\infty$</th>
<th>dk</th>
<th>$t_h$</th>
<th>$t_e$</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eksperiment</td>
<td>38</td>
<td>11.13</td>
<td>0.05</td>
<td>73</td>
<td>4.15</td>
<td>1.661</td>
<td>$H_1$ accepted</td>
</tr>
<tr>
<td>2</td>
<td>Control group</td>
<td>35</td>
<td>11.13</td>
<td>0.05</td>
<td>73</td>
<td>4.15</td>
<td>1.661</td>
<td>$H_1$ accepted</td>
</tr>
</tbody>
</table>

Table 2 showed that a variance combination for both sample was 11.13, $\infty=0.05$ and degree of freedom73. $t_{hit}$ was 4.15 and $t_{tabel}$ was 1.661. It can be concluded that $H_0$ wasn’t accepted and $H_1$ was accepted. It is because $t_{hit} > t_{tabel}$. It means that the students’ test result which was taught by using quantum learning method technology based assisted learning media had higher score that students who were taught by using conventional method.

Hypothesis 2
The hypothesis calculation was drawn in Table 3.

<table>
<thead>
<tr>
<th>No</th>
<th>Sumber Keragaman</th>
<th>Jumlah Kuadrat</th>
<th>Derajat Bebas</th>
<th>Kuadrat Tengah</th>
<th>$F_{tabel}$</th>
<th>$F_{hit}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baris</td>
<td>22689.63</td>
<td>1</td>
<td>22689.63</td>
<td>1.53</td>
<td>0.916</td>
</tr>
<tr>
<td>2</td>
<td>Kolom</td>
<td>22689.63</td>
<td>1</td>
<td>22689.63</td>
<td>1.53</td>
<td>0.916</td>
</tr>
<tr>
<td>3</td>
<td>Interaksi</td>
<td>56485.54</td>
<td>69</td>
<td>24764.49</td>
<td>1.53</td>
<td>2.28</td>
</tr>
<tr>
<td>4</td>
<td>Galat</td>
<td>56485.54</td>
<td>69</td>
<td>24764.49</td>
<td>1.53</td>
<td>2.28</td>
</tr>
</tbody>
</table>

Referring to table 3, it can be described that $F_{hit}$ for interaction was 2.28 , while $F_{tabel}$ with $\alpha=0.05$, was $F_{0.05 (1;68)}=1.53$. It can be concluded that $H_0$ wasn’t accepted and $H_1$ was accepted. It is because $F_{hit} > F_{tabel}$. It means that there was an interaction between quantum learning method and technology based learning media in influencing students’ learning achievement at grade XII of SMA Negeri 5 Batam.
3.2. Discussion

In this discussion, there are two basic studies which will explained associated with the relevant theory. First, the influence of quantum learning method technology-based assisted learning media. Second, the interaction of quantum learning method technology-based assisted learning media toward students’ learning achievement on Indonesian subject at grade XII of SMA Negeri 5 Batam.

Effect of Quantum Learning Method Technology-Based Assisted Learning Media

The first hypothesis testing results indicate that quantum learning method technology-based assisted learning toward students’ learning achievement on learn Indonesian subject at grade XII of SMA Negeri 5 Batam. From the results of hypothesis testing carried out showed that the variance was 11.13. For a real level with α = 0.05 and df = 73, $t_{hit}$ was 4.15 and $t_{table}$ = 1.661. It can be concluded that $H_0$ wasn’t accepted while $H_1$ was accepted. It’s because $t_{hit} > t_{table}$. In other words, it can be said that there was no significance difference between experiment and control group when they did Indonesian test.

Experiment group used quantum learning method and technology-based learning media. Rusman (2011: 351) explains that the benefits that can be obtained from the web-based learning, are: (1) the availability of e-moderating facility, that is a facility which can be used by educators and students to communicate anytime without being limited by distance, time and place, (2) it can be used as teaching materials or learning media which are structured and scheduled so the educator will know how far teaching materials has been studied, (3) students can revise learning materials at anytime and anywhere if necessary because it is stored in the computer, (4) if students need additional information they can access the desired site, (5) students more active and independent, and (6) it is relatively efficient because it does not require a lot of time and cost.

Another advantages of web-based learning is also proposed by Bates and Wulf as it was quoted Munir (2009: 174) according to them, web-based learning can improve quality of learning interactions. Online learning which is designed and implemented carefully can improve the quality of learning interactions between students with learning materials, students with teachers, and between students with other students. This kind of learning allows the students to express their opinions freely because no one watches them. Therefore, for low or shy students, they do not need to feel worry in expressing their ideas. The questionnaires and tests were conducted as schedule for research for both groups. There is no difference question and the form of test for both groups. The test was multiple choices test. It was used to find out the students’ perception and responses toward the application of quantum learning method and technology based learning media in learning Indonesian. The questionnaires were used to measure students’ ability in learning process. Furthermore, the test was used to measure students’ ability every meeting. It was conducted at the end of meeting and it was done for both groups.

Students are active in learning process. It is caused by the use of technology-based learning media. The learning activities require media to assist, facilitate, and to make learning process more meaningful. Tool or media in language teaching are all tools that can be used by teachers and students to achieve the objectives that have been determined. The importance of learning media according to Sudjana Rival (2009: 7) it can be used to enhance the teacher-student interaction and students-learning environments. Therefore, the main function of learning media is to supports the use of teaching methods by teachers.

Audio-visual media is media which can be seen and heard therefore teaching becomes more interesting. Example: a combination of slides and tape, video, chart, television programs, and language laboratory. The benefits of using these tools or audio visual media, among others: (1) provide an opportunity for students to practice independently in both inside and outside of the classroom, (2) to ease, help, and complete teachers’ role, (3) provide a model that is still used (no changes) to the students, especially if it is replay record with particular intonations, (4) to listen to the voices of several native speakers in the classroom so that students can distinguish the voice of women, men, children, youth with all its manifold, (5) record the students’ voice which can be used by teachers to evaluate and for the students themselves, it can be used to evaluate the results of self-production.
During the learning process, experimental group was taught by using quantum learning method. Quantum learning was used as a learning strategy to create an effective learning environment, implementing the curriculum, and facilitate the learning process. Fun learning strategy is a way of thinking taken by the teacher in selecting and implementing ways of delivering material to make students understand the lesson easily and to have a good learning. Appropriate learning strategies will give an opportunity to achieve the effective learning.

Quantum methods of learning referred to the steps as follows. To grab students’ interest "What is the benefit for me", and benefits for students’ life; (2) Natural, create or import a common experience that can be understood by all students; (3) gives name, provide keywords, concepts, formulas, strategies: an "input" (4) Demonstrate, providing an opportunity for students to demonstrate that they "know"; (5) Repeat, show students the ways to repeat the lesson, "I know, that I do know it": and (6) Celebration is an acknowledgment to finish, participate, and the acquires the skills and knowledge. The forms of celebration can be in term of compliment, giving gifts, singing and so forth.

The advantages of quantum learning method in influencing students’ learning achievement for Indonesian at SMA Negeri Batam can be explained as follows; (1) Quantum learning is based on cognitive psychology. (2) Quantum Learning is more humanistic, not a positivistic-empirical, "humanistic" and nativistics. (3) Quantum Learning is more constructive not a positivistic-empirical, behavioristics. (4) Quantum Learning focus on meaningful interaction, not just changing meaning. (5) Quantum Learning emphasizes on accelerated learning with a high level of success. (6) Learning quantum determines the naturalness and fairness of learning process and not artificial circumstances. (7) Quantum Learning emphasizes the meaningfulness and quality of learning process. (8) Quantum Learning has a model that combines the context and the content of learning. (9) Quantum learning focus on the establishment of academic skills, skills in life, and physical or material achievement. (10) Quantum Learning assigns values and beliefs as an important part of learning process.

From the results of the research findings and data analysis, it can be concluded that there is significant influence of quantum learning method technology-based assisted learning media experiment group. From the results of tests and hypothesis testing, it shown that the students’ test results in experiment group is higher than students’ score in the control group. It indicates that quantum learning method technology-based assisted learning media influence students’ learning achievement. Quantum learning method focuses on diversity and systematic order.

Quantum Learning Method Interaction and Technology Based Learning Media in Influencing Students’ Learning Achievement

From analysis data and research findings, it can be described $F_{hit}$ for interaction was 2.28, but $F_{table}$ with $\alpha = 0.05$, was $F_{0.05} (1;60)= 1.53$. It can be concluded that $H_0$ wasn’t accepted and $H_1$ was accepted because $F_{hit} > F_{table}$. It means that there was interaction between quantum learning method and technology based-learning media in influencing students’ learning achievement at grade XII of SMA Negeri 5 Batam.

In figure 3, it can be seen that point A students which were taught by using quantum learning method. In control group the average was 69.00. In point C referred to students on control groups, the average score was 79.60. Point C is the students who were taught by using technology-based learning media control group and point D was the students who were taught by using technology-based learning media on control group. It meant that there was interaction between quantum learning methods with technology-based learning media in influencing students’ achievement at grade XII of SMA Batam. In other words it can be said that there was a significant influence between quantum learning method and technology-based learning media to Indonesian test results. The hypothesis is accepted if $F_h > F_0$, the signifikant standard was 0.05.

4. Conclusion

Based on data analysis and discussions, it can be concluded that quantum learning method technology-based assisted learning media give influence to students learning achievement. First, the students’ test results score by using quantum learning method technology-based learning media was
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The test results score who were taught by using conventional methods. The effect is caused by the methods used. Naturally, technology based learning media can deliver the message, stimulating thoughts, feelings and desires of students in learning process. Furthermore, quantum learning method is a learning strategy that is used to create an effective learning environment, implementing the curriculum, deliver content and facilitate the learning process.

Secondly, there was an interaction between quantum learning methods and technology-based learning media in students’ learning achievement at grade XII SMAN 5 Batam. Therefore, quantum learning methods and technology-based learning media influenced students’ learning achievement at grade XII SMA Negeri 5 Batam. Based on the findings of the suggestions are: (1) Teacher of Indonesian subjects at grade XII of SMA Negeri 5 Batam should be more active in using technology. The teacher is suggested to able to use vary teaching methods (2) The students at grade XII of SMA Negeri 5 Batam are expected to be able to use time and technology effectively.

References