

THE IMPLEMENTATION OF COMPUTER BASED TEST (CBT) AS FINAL ASSESMENT AND ITS RELEVANCE TO THE TEACHING AND LEARNING PROCESS

(A case of students and teachers in SMA Negeri 1 Soe)

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ABSTRACT

This study aims at finding out the students' and teachers' perceptions on the implementation of the computer-based test as final evaluation in SMA Negeri 1 Soe. This study used a qualitative descriptive design. The instruments used were questionnaires and interviews. The data of this study was collected through spreading questionnaires and doing interviews. The data of this study were analyzed by using SPSS. The result of the study showed that students perceive there were some benefits of CBT implementation such as; getting new experiences, training them to operate the computer well and work harder, showing their grades directly, and teaching them to be honest. On the other hand, the teachers perceive that the implementation of CBT is a good way because it gave them a new challenge to be innovative in this digital era. It also was an effective way to measure the students' learning achievement, thus as an effort to improve the quality of teaching and learning. Besides the advantages of the implementation of CBT, there were some weaknesses such as; server error, electricity problems, time (session) delay, and computer errors.

Keywords: *Computer-based test, Students' Perceptions, Teachers' Perception.*

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INTRODUCTION

Teaching and learning process becomes the main component for teachers and students. Teachers do their best when teaching the students by using many ways that make students understand the material being taught. On the other hand, students also try to do their best to understand the lesson by listening to the teachers. Teachers and students have the same goal in the process of teaching and learning that is achieving the education goal. Teachers and students need a tool to measure students' learning achievement. To identify the students' level of understanding, teachers need to have an evaluation towards students learning achievement. The evaluation can be done in the form of assessing students' comprehension through a test. Assessment is a measurement tool for measuring how far students understand the lesson taught when teachers are teaching.

Some experts discussed about assessing students' learning achievement like Nitko & Brookhart (2007) who stated that in the traditional practice of education, evaluating student's performance has been an established practice where the students get score from the teachers at the end of a course or a unit of study. Teachers generally used test to know students' ability in learning (Ainsworth & Viegut, 2006,). In addition to giving the teachers clear indicators of the students' performance, the grades are considered "concrete evidence" to parents about the ability or achievement of their children in learning.

Teachers have the responsibility in administering and determining assessment details, that is used by academists as establishing basic sense in the disciplinary community" (Havnes & McDowell, 2004). It seems that teachers and students are two different groups at two different levels in the assessment process, with the teachers at the top designing and executing the assessment and the students on the receiving end trying hard to reach the standards set. With such a vertical relationship between teachers and students, the assessment provides few opportunities for the students to communicate their expectations and perspectives of assessment criteria, to critically examine the marking standards or participate in the assessment process (Havnes & McDowell, 2004).

The evaluation in the form of assessment has been established and done for many years since education was an important part of human's life but the assessment was done in the conventional method of assessment which is known as paper-based-test become the only available option for the evaluation at all levels of education. Now, this method is faulted because it does not suit the learning styles of many students (Bodman, 2004). As a result of these identified problems and the inclusion of information and communication technology (ICTs) in education, it is important to re-consider the modification of this conventional method of examination.

Based on the fact that evaluation which becomes an important part in teaching and learning process, SMA Negeri 1 Soe implements CBT. To improve the quality of teaching and learning to meet the educational goal, SMA Negeri 1 Soe starts to apply the assessment by conducting Computer Based Test. The application of CBT is a new thing that becomes a big problem for the students. That is why, this study will try to identify the problems faced by students and teachers in SMA Negeri 1 Soe in implementing Computer Based Test (CBT) as a way for assessing students' learning achievement.

Based on the discussion in the background of the study about the evaluation in the form of assessment for assessing students' learning achievement in the process of teaching and learning, it is important to find out the impact of Computer Based Test (CBT) implementation on the students' learning achievement in learning. SMA Negeri 1 Soe implements the Computer Based Test in the teaching and learning process as the way to evaluate students' learning achievement and to improve the quality of education to answer the demand of the globalization era. However, in the implementation of Computer Based Test (CBT), there are impacts and challenges faced by the teachers and students in applying it. Therefore, this study aims at finding out the relevance of its implementation; thus the problems faced and solutions to the problems.

LITERATURE REVIEW

Perception is how people see or interpret something. There are some definitions of perception. Worchel and Shebilske (1998:117), stated that perception is the process of interpreting information. Santoso (2000:32) stated that perception that is formed by experience is stronger than perception formed by sensation. It means that perception is formed by someones's experiences that is hard to be changed.

According to Robbins (2001:121-122), perception is a process by which people organize and interpret their sensory impression to give meaning to their environment. Perception is the ability to understand or notice something easily. Someone can receive something like a good or bad perception depends on what they feel in facing the object.

In short, perception can be viewed as a conscious mental and cognitive process of observing, comprehending and responding a particular thing, where a person tries to translate the stimuli that he or she receives. Those responses occur in people's awareness through their sensory organ. Then, these responses will be interpreted as meaningful information about the stimuli. Based on the explanation from the researchers above, it can be concluded that perception is a response to an object by giving the assessment to that object. Perception is also a process that caused people can accept and summarize information acquired from the environment.

Perception is one of the most important aspects of human intellectual, enabling it to know and understand the world around it. Without the correct perception, people are impossible to capture and understand the various phenomena, information or data surrounding them.

Wesely (2012) stated that learners' perceptions had been commonly associated with two targets: perceptions of themselves and perceptions of the learning situation. It means that perception of them is defined as how students understand of themselves and their own learning. While learner perceptions of the learning situation are how students experience and understand aspects of the classroom, such as the behavior of the teacher and students.

The use of computers has become popular in education in the last decade. Of particular interest was how to use computers and the internet to improve the proficiency and effectiveness of the evaluation process of education at all levels (Chua et al., 2013). Since the emergence of ICT, schools, institutions and examination bodies have incorporated computer-based test (CBT) as an indispensable tool in their examination administration. David (2016) added that online technologies have greatly influenced the means of conducting evaluation. Most institutions have adopted CBT as an assessment tool for admitting or screening the students.

According to Sadiq et al., (2011), CBT is an internet-based test or assessment administered using the computer or other technological devices. It is clear that the way teachers evaluate the students' learning achievements have moved from paper-based test to CBT. This happens in the field of education and other fields due to globalization. All universities in the world, colleges of education and polytechnics, even schools have replaced the customary paper and pen testing with CBT for academic assessment and

students' evaluation (Best, 2002). It offers several benefits over traditional paper-and-pencil or paper-based tests. It improves the speed of delivery, administration and scoring efficiency, improved test security, consistency and reliability, the faster response rate among others (Riku et al., 2001; Walker et al., 2004). Technology-based assessment provide opportunities to measure a complex form of knowledge through traditional methods (Bodmann and Robinson, 2004).

Assessment as a curriculum issue is a process for obtaining information that informs decision making about student learning, curriculum, programs, or education policies matters (Fisseha, 2010). The purpose of assessment among other things, are strengthening knowledge, skills, dispositions, and classroom practices. The major goal is to promote student growth and learning while also inspiring great teachers to remain in the class. Kellaghan & Greaney (2001) identified the roles of assessment in education. They stated that the role of assessment in education based on some components such as; describe student's learning achievements, identify student's learning problems, provide guidance, motivation, judgments about the effectiveness of the school, and draw conclusion about the adequacy of an educational system.

The purpose of classroom assessment and evaluation is a chance to students to show what they have learned rather than catching them out or showing what they have not learned. Needless to say, evaluation and assessment can focus on different aspects of teaching and learning: respectively textbooks and instructional materials, student achievement, and whole programs of instruction. These points are obvious to state that assessment is a tool for teachers to measure their students' understanding of the lesson taught, thus to discover the students' learning achievements in doing the teaching and learning process.

METHOD OF INVESTIGATION

The method used was a form of qualitative research because it focused on figuring out and describing the use of (CBT) as an assessment tool to measure the students' learning achievement in learning. Cresswell (1994: 145) stated that one of the purposes of qualitative research is to understand the participants' point of view of the events, situation and action that they give about their lives and experiences. Qualitative method used to get the depth understanding towards the teachers' and students' perceptions on CBT implementation as a final assessment. The researcher used 61 students and 3 teachers of SMA Negeri 1 Soe as the participants in order to gain the data. The data of this study were descriptive qualitative data. It focused on collecting the data by gaining information from the sample or participants through the responses to the questions. The instruments are questionnaires and interviews. The data analysis technique used in this study was descriptive statistic by simple calculation using SPSS. It was used to describe the percentage of participants, responses toward the statement in the questionnaire. After analyzing and interpreting data gathered from the questionnaire, the research transcribed and interpreted the interview result. Then the interpretation was triangulated with the result of questionnaire and discussed.

FINDING AND DISCUSSION

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This part provided the result of the data gained through questionnaires and interviews done in relation to the implementation of CBT in SMA Negeri1 Soe. The result of questionnaires about the implementation of CBT was shown as the tables below by stating the items (questions) one by one.

No	Item	Answer/Percentage	
		Yes	No
1	Computer Based Test is easier than paper based exam (test)	48 (78.68%)	13 (21.31%)

Table 1. Result of Question one towards the Implementation of CBT

Based on the result from item number one of the questionnaires as displayed in the table above, it could be seen that there were 48 students (78. 68%) who stated that the computer-based test (CBT) is easier than the paper-based test while 13 students (21. 31%) who stated that the implementation of computer-based test is more difficult than paper-based test. From the result of statement number one, it could be concluded that the computer-based test is easier to be used compared to the used of the paper-based test.

No	Item	Answer/Percentage	
		Yes	No
2	Computer Based test doesn't suffer from human error	30 (49.18%)	31 (50.81%)

Table 2. Result of Question two towards the Implementation of CBT

The participants' (students) answers to item number two based on the data shown above were 30 students or 49. 18% stated that he computer-based test doesn't suffer from human error while 31 students or 50. 81% of the students stated that even though the school implemented the computer-based test as the final assessment towards the students' learning achievement but still suffer from human error. It could be seen that the implementation of computer-based test still needs an improvement so that it would not suffer from human error.

No	Item	Answer/Percentage	
		Yes	No
3	Computer Based test assessment is reliable	46 (75.40%)	15 (24.59%)

Table 3. Result of Question three towards the Implementation of CBT

The answers from the participants towards item number three dealing with the reliability of computer-based test implementation showed that 46 students or 75. 40% of the students stated that the implementation of computer-based test is reliable while 15 students (24. 59%) of the students who stated that computer-based test was unreliable. It was very obvious that the implementation of computer-based test was reliable.

No	Item	Answer/Percentage	
		Yes	No
4	I prefer Computer Based test than paper based test	49 (80.32%)	12 (19.67%)

Table 4. Result of Question four towards the Implementation of CBT

From the result of the questionnaires displayed above, the participants' answers to the question number four were 49 students or 80.32% who stated that they preferred doing a test using computer-based test and only 12 students or 19.67% of the participants who stated that they did not prefer doing a test using paper-based test. It could be said that the participants' agreed on the use of the -based test.

No	Item	Answer/Percentage	
		Yes	No
5	Computer Based Test helps me to learn a lot on operating computer	56 (91.80%)	5 (8.19%)

Table 5. Result of Question five towards the Implementation of CBT

For item number five in relation to the implementation of computer-based test that trained the students on how to operate computer well, the data showed that 56 or 91.80% of the participants stated that computer-based test trained them in how to operate computer well, but there were 5 or 8.19% of the participants who stated that the implementation of computer-based test did not train them on how to operate computer. From the result shown on the table, it could be stated that the implementation of computer-based test was very good because it trained the students on how to operate computer well.

No	Item	Answer/Percentage	
		Yes	No
6	I could see my grade directly after doing the test	61 (100%)	0 (0%)

Table 6. Result of Question six towards the Implementation of CBT

The participants' answers to the item number six about whether the participants could see the result of the test directly after doing the test were all the participants stated the same answered that they could see (know) the result of the test directly after doing the test. It was clearly stated by the students in which 61 or 100% participants stated the same answer. It could be concluded that that there was no hesitation from the participants about their grade when doing the test because they could directly see it after doing the test so they could know how good or bad they were in doing the test.

No	Item	Answer/Percentage	
		Yes	No
7	I save much time working on Computer Based Test	45 (73.77%)	16 (26.22%)

Table 7. Result of Question seven towards the Implementation of CBT

For item number seven, the participants' answer based on the data shown were 45 or 73.77% of the participants stated that working on computer-based test helped them to save much time but there were also 16 or 26.22% of the participants who stated that computer-based test did not help them to save much time. Looking on the result of the participants' answer to this item, it was very clear that the implementation of computer-based test helped the students a lot in saving the time.

No	Item	Answer/Percentage
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		Yes	No
8	Computer based test trains me to work accurately	48 (78.68%)	13 (21.31%)

Table 8. Result of Question eight towards the Implementation of CBT

The participants’ answer to the item number eight in relation to the use of computer-based test that trained the students (participants) to work accurately, there were 48 or 78. 68% of the participants who answered yes that meant they felt it trained them to work accurately, while 13 or 21. 31% of the students answered that it did not train them to work accurately. It could be said that the participant felt that computer-based test helped them to do training in order to work accurately.

No	Item	Answer/Percentage	
		Yes	No
9	I find less problems when doing computer based test	36 (59.01%)	25 (40.98%)

Table 9. Result of Question nine towards the Implementation of CBT

Based on the data provided towards the item number nine about the problems found in dealing with computer-based test were 36 or 59. 01% of the participant stated that they did not find problems when dealing with computer-based test, but on the other hand, there were 25 or 40. 98% of the participants said that they found problems when doing the computer-based test. From the result shown, it could be concluded that even though the participants agreed about the use of computer-based test implementation but they still found problems in dealing with it.

No	Item	Answer/Percentage	
		Yes	No
10	I do not feel anxious when doing computer based test	40 (65.57%)	21 (34.42%)

Table 10. Result of Question ten towards the Implementation of CBT

The participants answered towards item number ten in relation to feeling anxious when doing computer-based test, there were 40 or 65. 57% of the participant said that they were not anxious when working on computer-based test and 21 or 34. 42% of the participants who answered that they felt anxious when doing the test using computer. It was very obvious that in dealing with computer-based test the participants were really anxious because they did not believe that they could get good grade after doing the test.

The result of questionnaires which was gained from the participants was similar to the result of the interview done by the researcher in order to get more data towards the perceptions of students and teachers towards the implementation of Computer Based Test (CBT) as the final assessment in assessing the students’ learning result at the end of a semester. The result of the interview showed the students and teachers’ perceptions toward the implementation of computer-based test as the way to measure students’ learning achievement. The participants; answers to the interview question about the implementation of the computer-based test were very clear. Some statements from the interview result were quoted to explain the participants’ perceptions to the application of the computer-based test as follows:

R: What do you think about the implementation of Computer Based Test (CBT)?

P1: ah... I think, the implementation of Computer Based Test is very good compared to a kind of test usehow do we call it? Its name is paper based test. The implementation of Computer Based Test is simpler then because we have been lived in this digital era so we can understand a bit about technology and it is reasonable if we use Computer based test. **(student)**

P2: According to me, CBT is good enough because it doesn't take time and can increase school accreditation since school which uses computer will level up. Besides, we transform from Paper Based Test (PBT) because we don't need to bring pen or pencil, or if we bring wrong pencil then computer cannot read the answer we have circled. CBT does not need that and it minimizes time allocation. **(student)**

The students' answers also similar to the teachers' responses as stated below:

P1: According to me, CBT is very good not very good but it helps enough which is "aaa" the development of science and technology in Indonesia. **(teacher)**

P2: My opinion toward CBT it become positive thing because it supports science and technology and CBT show to the world that Indonesia or for Example TTS have develop with the development of science and technology and then the children can now how to use computer. **(teacher)**

Based on the quotations above, it could be concluded that the computer-based test is a good thing because it is simple, helped the students, save time and raise the school level and accreditation. The teachers also stated that computer-based test was very good because it helped the students to prepare themselves to learn about science, technology and train them on how to use computer well.

In answering the question about the importance of using the computer-based test as the final assessment, the participants gave their answers as follows:

R: Why do you think the computer based test is important?

P3: In my opinion, CBT is important because first, it expands our understanding about operating computer and teaches us how to do something we never do using computer. **(student)**

P5: CBT is important because "aaa" here it trains the students compete with students in another place which the development of science and technology is good and the development by using CBT is good and "aaa" the students can compete with the students outside. **(student)**

P6: I think like that because we categorize as the small city and it important so the small city also know the development of science and technology and the children also know how to use computer and how to use it, and the models of the tools of technology. **(student)**

In addition, the teachers also stated similar answer to what the students said. For instance:

P1-3: Computer Based Test is important because ahhh...besides saving our money to copy the questions and answers sheets, buy some papers, etc. It is also can save our time so the students who follow the test feel like what... generally, in written test takes one or two weeks for us to know the score but in Computer Based Test, it is easy because the students can directly know their score as it ends which is very important for them in this modern era. **(teachers)**

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The quotations above showed that the application of computer-based test was very important. Some reasons that stated by the participants such as; expands students' understanding, challenge the students to do something new, train the students to improve the ability of using computer as same as students in other places. While the teachers stated that CBT was important because besides training the student to learn more about computer, it also helps to save money, time and be transparent because students could see their score directly after doing the test. It could be said that the application of CBT was really important.

The participants' answer to question in relation to the advantages of using computer-based test as the final assessment, all the participants stated the similar answer like the statements below:

R: What are the advantages of implementing Computer Based Test?

P1-6: The advantages of CBT was the management of scoring is good because we can see it directly, easier, save time, don't need more people and train us to use computer well. **(students)**

In answering this question, the teachers stated some benefits of CBT implementation such as;

P1-3: There are many advantages offered by CBT considered from many aspects, I think. The first advantage of CBT is that it is a new thing we do since we are the first school in this city implement this kind of test so we think that this is an advantage we have in our school, it helps us also do not spend money for buying papers, it saves our time, it helps us to learn new things and so on. The teachers also added that it becomes an important thing because it comes from their hard work so they are proud of implementing it. **(teachers)**

The statements were very clear that the implementation of computer-based had some advantages to all the students and teachers. In short, it can be concluded that the implementation of computer-based test in this school has some advantages for the students, teachers and school.

The answers of the participants about the next question were shown in the statements below:

R: what are the problems faced when implementing Computer Based Test?

The participants gave the similar answers to this question by stating that:

P1&6: ahh, problems that we face, sometimes the server switched off by itself which impeded our work but it didn't badly affect the computer because it is the server which went off. **(students)**

P2&4: The first problem is low loading network. Second, sometimes the server is error so the computer can switch off while working. **(students)**

P3&5: The first problem is network. Sometimes the network is error during test which impedes us while working on the questions. Then, when we are working then the computer is stop so make us very worry about our grade. **(students)**

While the teachers stated that there are some problems occur such as:

P1&3: Sure, in implementing the CBT, we found some problems like the signal, sudden light off so it's very difficult and so far an error occur won the first day where the electricity power that sometimes error that result in postponing the test. (**teachers**)

P2: The problems face in doing the test are the server is error, because when doing the test it is not sure the server run well. For example, in this school when doing CBT test at the time usually in the first session depend on server and the others the problem only the server but we take it as good experiences for us to learn more and do better in the next test. (**teacher**)

The statements from the participants were similar in which they explained that in implementing computer based test, they found problems such as; low loading network, sudden light off, sudden server switch, computer errors, electricity power problem, session delay, even worry about score but as stated by the teachers that it did not make them stop implementing the computer-based test but it became a good lesson for them to learn and do more for the better implementation of CBT in the next time that will result in a great result. It was very obvious that the implementation of the computer-based test had some problems but the participants could solve the problems well.

The participants' answers the questions which relate to the effectiveness of the computer-based test, are as the statements below:

R: How effective is the implementation of Computer Based Test?

P1,4,5: Compared to paper-based test (PBT), CBT is simpler because in PBT students have to spend money to buy pencil, pen, eraser, and other stationary which is complicated but in computer, decrease problems and dishonest, trained us to work on the development of science and technology so we just have to click the buttons which is easier. (**students**)

P2&3: According to me, it is not that effective since we can start longer than the determined time and finish longer if the network is bad. (**students**)

On the other hand, the teachers stated that:

P1-3: We think that the implementation of CBT is 75% effective and it just how to find the solution how to overcome the weaknesses so this test can effective and run without problems. (**teachers**)

The quotations above showed that the participants' answers were a bit different. Some students stated that the implementation of computer-based test was effective but some students stated that the test was not effective. While, the teachers stated that the test was effective even though there were still some small problems happened when implementing CBT. It could be said that the implementation of CBT was effective enough even though there were still some small problems found but it will be taken as a good reference in order to work hard on finding good ways to solve these problems for better application in the future.

CONCLUSION AND SUGGESTIONS

Based on the result stated in the previews parts about the implementation of CBT in SMA Negeri 1 Soe, it could be concluded that students stated some arguments like; the implementation of the computer-based test (CBT) gave them new experiences,

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trained them to work hard, made them to know their ability in learning, saw their score directly, challenged them to learn harder, taught them to be honest and learn more about science and technology.

However, there were still some weaknesses of the computer-based test such as; suffered from human error, made the students to worry about their score, spent much time because of the network, electricity and server error.

The teachers also stated that the implementation of the computer-based test gave them a new challenge in digital era, taught an effective way to measure the students' learning achievement, became a good way to promote the school level and accreditation, improved the quality of teaching and learning and save money.

Even though in the implementation of computer-based test, there were still some weaknesses like; server error, electricity problems, time (session) delay, computer errors. But the problems were solved well and became a good lesson for better implementation of CBT in the future. In short, the implementation of the computer-based test was done well.

SUGGESTIONS

Based on the result of the students' and teachers' perceptions about the implementation of the computer-based test, there are some suggestions the researcher want to stated namely; the implementation of computer based test (CBT) is a good way to measure the students' learning achievement need to be kept as a good effort in order to achieve the teaching and learning goal, students and teachers need to work together in solving the problems found in CBT implementation, teachers need to work together with the government in this regency for improving this program to be implemented in all schools as an effort to be better in the future, the students have to prepare everything well in facing the test so the result will be better.

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