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A Computer-Based Standardized Testing: The Challenges and Strategies

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Abstract

Computer-based standardized testing has become a new way to measure students' achievement to graduate from senior high school in Indonesia, starting from 2015. Seeing the importance of this computer-based test for students, the researchers found it important to conduct a study about students' voices in this test to ensure the effective use of the test. This study focused on exploring challenges faced by the students in using a standardized-computer-based test. Moreover, the researchers also explored strategies used by the students to overcome the

challenges. This study used qualitative research conducted in the English education department of a private university in Indonesia. The researchers applied an interview to six students less than one year after they conducted computer-based testing. The findings showed that insufficient facilities to conduct the test, examination's schedule, time management, and lack of simulation were the challenges faced by the students in implementing the test. The study also revealed three strategies used by the students to overcome the challenges. There are strategies to face the challenges related to facilities, strategies to manage time better, and strategies to prepare the examination well.

Keywords: English National Examination; computer-based test; assessment; standardized testing

Introduction

The Indonesian government does some reformation to improve the quality of education. One of the reformations was the implementation of the National Examination as a standard evaluation for students in elementary, secondary, and high schools since 2005. Research from Pakpahan (2016) supports the National Examination as an appraisal of the students' competencies achievement during the learning process in the unit of education. This standardized test is used by students from all over Indonesia to measure students' achievement.

Since the Indonesia Minister of Education and Culture use the National Examination as the standardized testing, it has become the standard for students whether they can continue their studies to a higher level of education or graduate from school. According to Hadi (2014), the National Examination becomes the sole factor in determining

students' graduation. Because of its role, the National Examination became a high-stake test. It also has received many criticisms of its adverse impacts on Indonesian education. The critics come from various stakeholders, including the students, teachers, and the government. Then, the ministry reassessed the use of the National Examination. This examination was no longer the sole measurement to determine students' graduation in 2015.

Then, in 2015, the government changed the implementation of paper-based National Examination into computer-based National Examination as a way to accommodate technological development in an educational context. Another consideration to use a computer-based test is because it brings more accurate and reliable results (Mubashrah, Tariq, & Shami, 2012). The use of the computer-based test is trusted to test the students because this standardized test can

decrease cheating among students. Then, the use of the computer-based test is accurate in giving the score.

Even though the computer-based test brings positive aspects, the implementation of computer-based testing also comes with some problems. One of the biggest problems is the technology infrastructure in the school environment (Brown, 2019). In Indonesia, where school's technological facilities vary from places to places, the schools in the cities are reported to have more advanced technological facilities compared to schools in rural areas (Nasution, 2014). The difference in technological facilities can lead to the difference in students' ability to use the computer in testing and students' readiness as the important aspects to consider in conducting computer-based testing (Jamiludin, Darnawati, & Uke, 2017). The students' readiness in doing computer-based test include their ability to use a computer. This statement is in line with research conducted by Puspawati (2014). She reveals that students' readiness has relations to operating used technology skills in testing. It influences the score obtained from the test. Jamiludin et al. (2017) state that students who have a better knowledge of computers could conduct the computer-based test successfully than the less tech-savvy students. Wise (2019) also claims that test-takers' readiness could also influence score

validity, where the score gained from the test may not reflect the true picture of students' ability.

Considering the importance of how students' readiness may influence the result of computer-based standardized testing, research is necessary to see how students in Indonesia perceive their readiness in conducting computer-based standardized testing. Based on the explanations above, the researchers conducted research focusing on students' perceptions of the challenges and strategies towards computer-based standardized testing. Understanding the challenges can make some stakeholders such as the schools and students anticipate the problems which may appear during the test, so both the schools and the students can prepare it well, whereas knowing the strategies in that implementation may help schools and students for the test. Therefore, the findings can be useful for the schools and students as the guideline in taking the test.

Research Questions

- What are the challenges faced by the students in the use of computer-based tests in English national examinations?
- What are the strategies used by the students to face the challenges in the use of computer-based tests in English national examinations?

Literature Review

Indonesian Standardized Testing

The Regulation of the Ministry of Education article 1 number 4 states that the National Examination is an activity to measure graduate's competence nationally, which refers to the Graduation Competency Standard. National Examination becomes the standard of the education quality in each region. Hence, the government determines the National Examination result as the needs of the students to continue their study. According to Sukyadi and Mardiani (2011), the National Examination could be used to rank and compare individuals and schools. Therefore, Indonesia uses National Examination as standardized testing.

In implementing the National Examination, there are two techniques included in the test, i.e., the paper-based standardized test and the computer-based standardized test. Indonesia used the paper-based standardized test in the National Examination from 2005-2014. Then, in 2015, the implementation of the paper-based test had changed to a computer-based standardized test. Jamiludin et al. (2017) stated that there are two techniques in implementing a test, namely by paper-based tests and computer-based tests.

Computer-Based Standardized Testing

Terzis (2011) states that one of the essential aspects of educational development is assessing students because it measures the students' knowledge. The development of technology, especially for a computer, can be used by the Minister of Education, teacher, and schools to assess and grade the students. Seeing the opportunity, the Indonesia Minister of Education and Culture decided to use a computer since 2015 in the National Examination or School Examination to assess students. However, in 2015, some schools still did paper-based tests to know whether it was appropriate or not to measure students' knowledge.

A computer-based standardized test is a test conducted in a school using a computer. Brown (2004) states that a computer-based test becomes the burgeoning of assessment to measure students' knowledge. Moreover, there is an opinion toward a computer-based test believing that it will increase students' motivation, ease the students in doing the test, and decrease cheating possibility among students. The use of a computer-based test in measuring students' competence is supported because it brings an accurate result that the score already set electronically. According to Brown (2004), a computer can score electronically for reporting the result quickly.

Based on the Indonesia Minister of Education and Culture, in the first year of the implementation of a computer-based standardized test was successful and getting praise from other countries. However, some problems appeared in that implementation. Some opinions revealed that some students were unfamiliar with this type of test, or some schools still had incomplete facilities, and limited client-server to support the software and hardware used in this test.

Challenges in Using a Computer-Based Standardized Testing

There are two opinions toward computer-based tests based on students' points of view. Some students enjoy working with the computer because they are familiar with the device. In line with Terzis (2011), he argues that students enjoy working on the computer because it creates excitement. Some students enjoy it when they are working on a computer.

The use of computers is known as the technology of instrumental assessment. However, it faces some challenges in the implementation, which appear from students as well as from schools. The first challenge in using a computer-based test is students' familiarity with the computer. Students who are not familiar with computers tend not to do well in the tests (Jamiludin, Darnawati, & uke, 2017). Students' familiarity could influence

the students to work during the test because it is the first experience for them to implement the computer-based test in the National Examination.

The second challenge in the implementation of the computer-based test is in the schools. The challenge comes from computer facilities. Students who study in high-quality schools perhaps do not face this challenge than students who study in low-quality schools. Schools with high quality tend to have complete computer facilities than schools with low quality. Students from schools with incomplete computer facilities may conduct the test lately. Some of them usually join the test in the other schools which have complete computer facilities.

The incomplete computer facilities affect the students in conducting the computer-based test. Based on the researcher's experience, schools will divide the test into two or three sessions. Then students will be divided into two or three groups. Students from group one will get the first session of the test in the morning. Students from group two will get the second session in the afternoon. The students who get the third session are less happy compared to those who get earlier schedules. (Sulistiyono, Suyata, & Rahayu, 2016).

The third challenge is still from school facilities such as servers and electricity. When the electricity goes out, the computer shuts

down, and when the server does not run well, the computer will be slow down (Jamiludin et al., 2017). When the students face the challenges both of the server and the electricity during the test, it will be the worst challenge because electricity is the main component in using the computer. Besides, the server also becomes the main component to run the test. The students may feel panic when they face this issue. The challenge could ruin their concentration during the test and the students' results.

Strategies to Face The Challenges in Using Computer-Based Test

There are some strategies to face the challenges mentioned in this literature review. The computer-based test is viewed as a challenge for students because they are not familiar with it. The strategy to face the students' unfamiliarity is that the schools have to give practice for students through assessment using a computer-based test (Sulistiyono, Suyata, & Rahayu, 2016). The students also have to practice by themselves in operating the computer.

The challenge of the computer-based test that faces by the students in the examination is the division. According to Sulistiyono et al. (2016), to face the challenge of a division of the test, the schools should provide better computer facilities.

Furthermore, to face the challenge of server and electricity, the schools can add bandwidth and cooperate with Electricity Enterprise State (Sailan, 2016).

Research Methodology

A qualitative research method was applied in this research to discover the challenges faced by the students in conducting a computer-based test and the strategies used by the students to face the challenges. Creswell (2012) argues that one of the qualitative approach characteristics is to discover and develop a detailed understanding of the trends. The researchers applied descriptive qualitative research as the research design of this research. Through descriptive qualitative, the researchers could explore the participants' point of view and believes more depth. Lambert and Lambert (2012) argue that the objective of descriptive qualitative is to discover a comprehensive summary of a specific trend experienced by the participants.

The researchers did the study at a private university in Yogyakarta, Indonesia. This private university was selected because the university provided many students who graduated from different senior high schools, so it was easy to select the participants of this research. Also, the researchers could gather and access more data from students from different senior high schools.

The participants of the research were six students of a private university in Yogyakarta batch 2018. They were Mawar, Melati, Sekar, Mayang, Bunga, and Arum. All the participants were selected because they experienced using the computer-based test as standardized testing. The researchers used a pseudonym to describe and keep the participants' identities – some criteria in selecting the participants. The researcher selected six students from the ten students by seeing their high school background. The participants graduated from A and B schools' accreditation. The reasons why the researcher chose A and B accredited schools because both an A and B accredited schools have their challenges and strategies in implementing the computer-based test so that each participant might face different challenges and strategies.

Also, the researchers believed that students who graduated from B accredited schools may have more challenges than students who graduated from schools with better accreditation. By selecting both an A and B school accreditation, the researcher gathered the data more depth, and it answered the research questions of this research. Two participants in this study had graduated from B schools' accreditation. They were Bunga and Arum. Four participants had graduated from A schools' accreditation. They were Mawar, Melati, and Mayang.

The other criterion for selecting the participants was from their province's background. By selecting the province's background, the researcher faced different challenges and strategies in conducting the test. The participants in this study are from different provinces. In selecting the province, the researchers chose two provinces that have less quality education and four provinces with a better quality of education. The researcher chose two participants who are from provinces that have less quality education and four participants who are from provinces that have better education quality. It helped the researcher in gathering depth data. Having less than a year of experience using a computer-based test became the other criterion in choosing the participants.

In collecting the data, the researchers used an interview. The researchers made the interview guideline before doing the interview. The interview guideline covered the research questions of the challenges faced by the students in using a computer-based test and the strategies used by the students to face the challenges. In conducting the interview, the researchers used the Indonesia language to ease the participants to answer the questions. The researchers used a mobile phone to record the participants' answers during the interview.

After interviewing the participants, the researchers transcribed the recording into the

word. The researchers did member checking to ensure that the transcript fit what participants said in the interview. In doing member checking, the researchers showed the transcript to the participants to cross-check. Then the researcher analyzed the data by doing coding to find the themes from the interview related to the students' perception of the use of computer-based standardized testing. In analyzing the data, the researchers used four steps mentioned by Saldana (2009). Those four steps are compact of fact, the accumulation of the same fact, categorizing and reporting the data.

Findings and Discussion

The researchers report the findings and the discussion to support the findings of the research. The findings reveal the students' perception of the use of computer-based standardized testing in the National Examination.

Challenges Faced by the Students in Using Computer-Based Standardized Testing

The researchers found four categories of challenges that were faced by the students in the implementation of the Computer-based test. Those four challenges are insufficient facilities to conduct the computer-based test, the examinations' schedule, time management, and the lack of simulation. The

discussion to support the findings presented in the following paragraph.

Insufficient facilities to conduct the computer-based test

In this part, the challenge faced by the students was the facilities. The participants said that facilities became the most significant challenges. There were five themes of challenges found in this part.

Insufficient computer. Three participants, Mayang, Arum, and Bunga, had similar experiences towards the insufficient computer. Their schools did not have complete facilities for the computer-based test. Some students had to bring their laptops to conduct the test because the school did not have sufficient computers. This finding is in line with Sulistiyono, Sutaya, and Rahayu (2016), who argue that there are some requirements for the schools to conduct the computer-based test, and one of them is the computer. If the schools do not prepare the computer, it might disturb students in conducting the test.

Less equipment for the listening section. Listening is one of the sections in the implementation of the computer-based test. The earphone is one of the essential facilities in conducting the listening section. The finding showed that the earphones did not work properly, and the schools did not provide

many earphones, so the students could not change their earphones with better ones. In conducting the English test in the computer-based test, the earphone problem becomes the reason why the students did not finish the listening section well. Also, it can affect the students' results. That way, the listening section becomes one of the crucial parts of the test. According to Saukah and Cahyono (2015), listening and reading sections become the central part that focused on the English National Examination Competency Standards of Graduation.

The unstable electricity. There must be electricity to run the computer well. The finding showed that electricity was also a challenge. Three participants, Mawar, Sekar, and Melati, faced the same challenge that sometimes the electricity was off. Then the students could not continue to do the test. They had to wait until the electricity turn on. Jamiludin et al. (2017) state that to run the computer in the examination, it needs electricity. Hence, electricity becomes the crucial facilities to conduct the test.

Lack of compatible computers. The students' challenge is mostly the computer. Melati and Arum said that they had experienced where the computer was off suddenly during the test. Melati added that some of the students in her room did not get a compatible computer. This statement had a

similar idea to Jamiludin et al. (2017). They state that in conducting the computer-based test, the computer could be slow down anytime if the computer is not compatible. Hence, this challenge could trigger students' anxiety.

Unstable connection. The findings showed that there was a problem with the connection during the test. Melati had experienced where the connection became the challenge in conducting a computer-based test, especially in her school. She faced the connection getting lost, so her school had to delay the examination. Melati's experience was also similar to Arum. She faced an unstable connection, and it caused a delay in the test. When the computer-based system has a problem, the implementation of the test will be delayed (Sailan & Harmiyuni, 2016). Therefore, not only the examination gets postponed, but also the student's concentration will decrease.

The examinations' schedule

The participants experienced where the computer was insufficient and affected the examination. Arum, Mayang, and Melati had this particular experience. Their examinations had to be into three sessions because of the insufficient computer, in the morning, in the afternoon, and in the evening. The challenge from this problem is that the division of three sessions does not fair for some students. Arum

argued that students who got the first session of the test would have better concentration than students who got the third session due to the enthusiasm of early schedules compared to the third session. This finding is in line with Sulistiyono, Suyata, and Rahayu (2016). They argue that students who get the first session of the examination have fresher minds in the morning.

Time management

The students faced challenges in managing time during the test. The finding showed that the participants, Sekar, and Mawar were challenging to manage the time because they could not mark the main idea on the items or mark the important points. They added that they could not scrawl or mark the answer on the questions; it avoided them from finishing the test quickly. Hence, they could not manage the time in the test. They explained that when they used a paper-based test, they could scrawl the critical point of the items on the paper. However, they could not scrawl the point when they used a computer. The participants stated that they needed more time to finish the test when they could not scrawl the items. Based on the participants' experience, when they conducted the Reading section, she was challenging to answer the item because she could not mark or scrawl the points on the items.

The lack of simulation

The finding showed that the lack of simulation became the challenge before the due of the test. Based on the interview result, the students who had less knowledge of computer-based tests felt that school should have conducted simulations for students before the test. Therefore, the students would have known how to operate the computer-based test.

The researchers found that students felt panic while having the test because they had not practiced or joined simulation of the computer-based test. The students were not familiar with the test. So, they were not able to conduct the test well. This finding is in line with Muna, Witarsa, and Ulfah (2018), who mentions that anxiety would appear inside of the students because there is no simulation on the computer-based test.

Strategies Used by the Students to Face the Challenges in the Use of Computer-Based Test

The researchers found three categories of strategies applied by the students to overcome the challenges from the computer-based test. The first category is strategies to face the facilities challenges. The second category is strategies to have better time management. Then the third is strategies to prepare the test

well. Hence, each strategy is in the paragraphs below.

Strategies to face facilities challenges

There are two themes in this category, the technical strategy, and non-technical strategy. Both technical strategy and non-technical strategy are used by the five participants, Sekar, Melati, Mayang, Bunga, and Arum, to overcome the challenges in using a computer-based test.

Technical Strategy. The challenge faced by the participants in the test is facilities such as the earphones and the computer. The researchers found two strategies in this part. The first is that students checked the test's facilities. Then they confirmed to the invigilator if they face a problem during the test. In line with Antoni (2014), students have to prepare the tools for a listening section before the section begins.

The second is that students have to learn and prepare for the computer. These are the strategies to face the challenge of students' unfamiliarity with the computer-based test. The participants stated that to minimize the challenge, the students had to learn in using a computer-based test. Students also had to prepare for the computer by bringing their laptops to conduct the test. The participant stated that students in her schools had to bring their laptops because of insufficient computers

in her school. According to Muna, Witarsa, and Ulfah (2018), besides preparing the computer, students should often learn from books.

Non-Technical Strategy. The finding showed that non-technical strategy to face the facilities challenges appeared from students' feelings. The strategy used by the students was managing their feeling not to panic. The challenges that appeared during the test could disturb students' concentration. When students working with a computer for around two hours, and they face challenges in the implementation, it will cause anxiety (Thurlow, Lazarus, Albbus, & Hodgson, 2010). In managing students feeling, this research found that when having problems during the test, they should take easy and try to calm down. If they were panic, they would face the other bigger challenges because of being panic. Therefore, managing students' feeling is the appropriate strategy to apply by the participants.

Strategies to have better time management

The finding showed that students faced the challenges of time management. Hence, this became the strategies used by students to overcome the challenges. Based on the interview result, in time management, the strategy used by students is to manage the time. They decided how many minutes were needed

to answer one item. Terzis (2011) states that the essential factor in conducting the computer-based test is the time. That way, there must be a better technique to manage the time during the test. Based on the participants' opinions, dividing the time helped the student to manage the time in conducting the test.

Strategies to prepare the examination well

The researchers found strategies to face the challenge of lack of simulation. Learning and joining a test simulation became the strategies used by the participants. To prepare the test well, the students had to learn the material. Then they should join a test simulation conducted by the schools to familiarize students with the use of a computer-based test. Thurlow et al. (2010) state that students are unable to use online measurement tools if there is no prior training.

Moreover, to make students familiar with the computer, students have to update their knowledge of computer use. This finding is in line with Muna et al. (2018). They mention that students are supplied with the technology in extracurricular to compliment in teaching and learning process, so the students should not feel nervous about operating the computer in the test.

Conclusion

To sum up, the participants reported that they had a positive feeling in using the computer-based test as the technique in implementing standardized testing. They added that the use of the computer-based test was good and efficient for the students. It was good and efficient because the computer-based test brought an accurate result. Besides, the implementation was more practical than using paper-based. The other participants' responses reported that the use of a computer-based test appeared to be uncomfortable. It because the computer-based test brought some problems in the implementation.

Some challenges came from both of the participants from A school accreditation and B school accreditation. However, participants from A school accreditation did not face the challenge where they had to bring their laptops because of the insufficient computer in the school. The results showed that there were no significant challenges between provinces with better quality education than provinces with less quality education.

The researchers propose some recommendations related to this research. They are; first, students who intend to conduct computer-based tests should be more prepared such as joining a computer-based test simulation. Proper preparation can help them

to pass the test successfully. Secondly, schools should support the implementation of a computer-based standardized test with proper preparation. Also, schools should give a computer-based simulation for students before due to the test. In the end, the school can provide such a test using a computer in school test activities so that students familiar with the use of it.

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