

# Students' Anxiety Facing Computer Based Test (CBT) System of National Examination

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**Abstract**—National examinations in education sometimes become a debatable issue among various groups. In response, the government made changes for the better education in national examination system. National examination that was originally done in written form (Paper Based Test/PBT) changed into a computer system or (Computer Based Test/CBT) in academic year of 2014/2015. Changing the PBT national examination into the CBT national examination was because the CBT national examination had more benefits than the other. However, the limited human resources in the management of test facilities that support the implementation of CBT national examination became one of the things needed to be considered and paid attention to, especially for students who would have the CBT national examination. It was a new thing that triggered students' anxiety, not to forget mentioning that the examination itself was already made them anxious. This study was a survey done by using questionnaire method given to the senior high school students in 3rd grade in Yogyakarta province. The results of this study are: (1) generally, students' anxiety is in medium level. Science students' anxiety in the idea of having CBT system for the national examination is medium level, and it is in similar level for the social students; (2) there is no relation between the students' anxiety with their major (natural or social science).

**Keywords:** *students' anxiety, computer based test, national examination*

## I. INTRODUCTION

Education is important for the sustainability of every individual. Therefore, the quality of education must be improved for the better. One of the forms of education evaluation in Indonesia is by conducting the national examination. National examination is one of the policies made by the Indonesian government in terms of education, especially in the implementation of the final assessment at national level of education. Assessment has an important role in the educational process. It is also considered as an important measurement tool in evaluating the student's performance. In addition, the assessment is important as a process of obtaining information that is used to make decisions about the students, the curriculum and programs, and the educational policy [1]. The national examination is a form of evaluation of students, the education unit, and educational programs carried out by independent institutions on, thorough, transparent, systemic, and done on a regular basis, to assess the achievement of national education standards [2]. The national examination is the measurement and assessment of national competency attainment in certain subjects. National exam SMP / MTs, SMA / MA / SMAK / SMTK and SMK / MAK can be done through Paper-Based Test (Paper Based Test) and/or Computer-Based Test (Computer Based Test) [3]. However, not all of the schools in Indonesia implement the new CBT form of national examination. The CBT system is done gradually by certain schools that meet the requirements.

CBT national exam has already been implemented in 2014 in Indonesia-Singapore junior high school and Indonesia-Kuala Lumpur junior high school. The result was quite encouraging that it pushed the government in improving the students' literacy to ICT (Information and Communication Technology). CBT National examination system is an effective solution for carrying out the evaluation or educational assessment conducted on large number of students. This is also explained by the results of the research that the validity of web-based CBT tests given to large number of respondents is proved [4]. The statement that CBT test or exam is effective for educational evaluation with large number of participants is in line with the policy of the Indonesian government which is about the CBT national exam. However, schools to

implement the CBT system are required to submit the confirmation on the school's readiness of implementing the system. Furthermore, a process checking is also essential, done by the official verification to ensure the school's readiness on facilities and infrastructure. The verification process covers the availability of computer laboratory, networking, switching devices, internet access, UPS, generators, server, client, and other supporting infrastructure [5]. The benefit of CBT national exam system is on the time division. It is divided into three sessions in a day. One subject is done in each session, resulted in a better integrity of the students. This is because the questions of examination appeared on each computer is different [6]. In addition, the different examination question for each student is proven to decrease cheating drastically [7]. Nonetheless, there are some students who may be anxious with the new system [8]. It is due to the general computer literacy level of the students.

Anxiety can be observed from the attitude or behavior of the person, on this discussion is the high school students. High anxiety of every level is observed from most of the students, caused by the CBT system implementation for the examination [9]. The test is similar with the national exam. National exam has positive and negative impact. One of the negative impacts is increasing students and teacher anxiety [10]. Anxiety happened to students will lead to certain traits or symptoms. Certainly, anxiety produces physical symptoms. In fact, some people suffer particularly from the changes in appetite, sleep, energy, or pain, when they are reported to be lost in their own thinking, showing behavior problems. In other opinion, Chess & Hassibi [11] stated that anxiety is defined as an unpleasant situation that is usually perceived as a fear of something that will happen and feeling irritable accompanied by anxiety, fatigue, and a variety of somatic symptoms such as headaches and stomach aches. Anxiety is an individual experience related to mental tension alarm as a result of public reaction and inability to confront the problem or their sense of security. Anxiety is accompanied by psychological and physiological signs. Psychological signs are including shaking, sweating, and increased heart rate. While signs of psychological panic are including tense, confused, and cannot concentrate [12]. Signs of emotional anxiety caused by examinations are over whelming feelings, helpless and hopeless, ashamed and worthless (feels like a failure), panic, unable to concentrate, complained of being ill, have an angry outburst or tantrum, fatigue, and difficulty in sleeping the night before the test [13]. In this case, one kind of test or exam that may cause anxiety in students is national exam that students at the end of every level of education should face. Now with the new CBT system of national examinations, the students are prone to experience higher anxiety. This statement is the idea of this research on studying the anxiety of the high school students in Yogyakarta regarding the implementation of CBT system on national examination.

The problem formulations of this study are: (1) how does the level of anxiety of high school students in Yogyakarta province in facing the CBT national examination? (2) Is there any influence between the students' major (natural or social science) and the anxiety level?

The aims of the study are: (1) to determine the anxiety level of the high school students in Yogyakarta province on the CBT national examination, (2) to determine whether there is any influence of major, which were natural science and social science, with their anxiety level. The benefits of the study are: (1) giving contribution to the conceptual studies on the effect of the government policy on the CBT system for national examination to the anxiety of high school students in DIY in facing mathematics national exam, (2) giving benefit to the schools because it could be used as the consideration for giving better guidance to the students in facing the national exam, so that their anxiety could be controlled, (3) being useful as information and knowledge for academic use and public use in general about the anxiety of high school students in Yogyakarta province caused by the implementation of CBT on the national examination, (4) being used as a basis for similar research in other provinces or for similar research with different variables.

## II. RESEARCH METHOD

### A. *Research Design*

This study was a survey conducted by using questionnaire created according to the theory of students' anxiety in facing CBT national examination. This study described the results of the analysis of the students' anxiety level.

### B. *Research Subject*

The population in this study was all students of class XII (3rd grade) in Yogyakarta province which senior high school implemented CBT system for the national examination. Selected samples were seven schools in four regencies and one municipality. The regencies were Sleman, Bantul, Kulonprogo, Gunungkidul regencies, and also Yogyakarta municipality. The samples were 318 students, consisted of

167 science students and 151 social students. A science class and a social class were selected randomly from each school.

### C. Research Procedure

The study was conducted on February 17th to March 5th, 2016. This study was a survey conducted by using questionnaire as data collection instrument. The questionnaire used five alternative options, which were always/strongly, agree, often/agree, sometimes/hesitations, rarely/not agree, and never/strongly not agree. The scale used was the Likert scale, in the range of 1-5. The higher the questionnaire score of the student, the higher the students' anxiety was.

After going through the validation phase, the questionnaire then was tested to determine its reliability. The questionnaire reliability was 0.824, and KMO's score was 0,720. Furthermore, the questionnaire was given to selected respondents or samples to obtain the research data.

### D. Data Analysis

Data analysis was conducted after the data had been obtained. To analyze the data, first of all, it was analyzed by using central tendency analysis. It consisted of the average, median, mode, standard deviation, maximum score, and minimum score. The data then was analyzed to determine the level of anxiety of the high school students. It was analyzed by using the criterion table of anxiety score. The last, the data was analyzed to find out the anxiety level of the sample, both from the science and social studies majors. It was focused on whether there was any influence of major, which were natural and social science, with the anxiety of high school students in Yogyakarta province. The data was analyzed by using different average test (independent sample t-test).

## III. DISCUSSION

The discussion in this study consisted of two main discussions. The first discussion will be the discussion as a whole on the level of anxiety of high school students in Yogyakarta province in the CBT national exams. It will be adapted to table criteria. The second, the discussion will determine whether the difference in major, whether it is natural science or social science, could influence the anxiety level of the high school students.

### A. Anxiety Level of High School Students in Yogyakarta Province Facing CBT National Exams

Data description of high school students' anxiety is shown in Table 1.

TABLE 1. DATA DESCRIPTION OF STUDENTS' ANXIETY FACING CBT NATIONAL EXAM

	Natural science class	Social science class	Total
<b>Number of students</b>	167	151	318
<b>Average</b>	86,521	84,099	85,31
<b>Median</b>	88	84	87
<b>Mode</b>	88 and 89	83	88
<b>Standard Deviation</b>	12,584	12,907	12,775
<b>Maximum score</b>	118	115	118
<b>Minimum score</b>	48	45	45

The table shows that the average level of the high school students' anxiety for natural science major is at 86.521 and the average level of the social science students' anxiety is at 84.099. It is clear that the average level of anxiety of natural sciences major is higher than the social sciences. Reflected in the table also the median and the mode of natural science students are higher than the social students'. Moreover, from the standard deviation, it can be seen that students in social science class scored higher than the students in natural science class. The maximum and minimum scores of natural science students are also higher compared to the students of social sciences'. However, both majors have similar range of score, exactly a score of 70.

Overall, the number of students 318 provides an average 85.31, median 87, mode 88, and standard deviation 12.775. As for the maximum value and the minimum value includes both science and social groups, the maximum value is 118 and minimum value is 45. The values can be categorized based on the criteria for the anxiety level of high school students in Yogyakarta province facing the CBT national examination by using the criteria as served in Table 2 [14].

TABLE 2. CRITERIA OF STUDENTS' ANXIETY

Interval	Category	Criteria
$Mi + 1,5Si < X \leq Mi + 3Si$	$120 < X \leq 150$	Very High
$Mi + 0,5Si < X \leq Mi + 1,5Si$	$100 < X \leq 120$	High
$Mi - 0,5Si < X \leq Mi + 0,5Si$	$80 < X \leq 100$	Medium
$Mi - 1,5Si < X \leq Mi - 0,5Si$	$60 < X \leq 80$	Low
$Mi - 3Si < X \leq Mi - 1,5Si$	$30 < X \leq 60$	Very Low

Based on Table 2, it can be stated that the average level of anxiety of the natural science students is 86.521. The category is medium. Moreover, the average level of anxiety of the social science students is 84.099. The category is also medium. In general, the average level of anxiety for both of the majors is 85.321, which is categorized as medium criteria. CBT national exam is possibly a way of implementing the new exams for some students, despite of the fact that there will possibly be some students who are not accustomed to using the computers. In fact, the results of the study stated that the student anxiety is at the medium level. It can be concluded that the students are generally able to overcome a sense of anxiety in them, so that the students will have them in control.

The anxiety that these students are feeling when it comes to the CBT implementation for the national examination can also be a positive energy when it is not excessive. It can be used as encouragement for students to get better exam results. Students with high level of anxiety will have lower cognitive achievement, while students with low anxiety will have higher cognitive achievement [15]. In the other hand, excessive anxiety may cause a psychological impact on students. The test results may also not reach its optimum possibility.

The results are consistent that the anxiety experienced by students regarding the implementation of national examination is actually a strong cause that motivates the students to learn and try (79.1%) [16]. The high students' motivation of learning and students effort will bring good result. Motivation and effort being mentioned will be able to help the students control and lower the students' anxiety in facing the examination. It can also lead to better concentration while doing the examination, for one of the symptoms anxiety can cause to an individual is a low level of concentration or being "blank" during the test [17].

#### *B. Analysing Whether There Is Any Relation between The Students' Major and The Anxiety Level of High School Students in Yogyakarta Province in Facing CBT National Examination*

This analysis is conducted by using different average test (independent sample t-test). Before analyzing, the data must fulfill the assumption test. By means assumption test here are normality test and homogeneity test. The hypothesis used in the test for normality is as follows:

H0: Data distribution is normal

H1: Data distribution is not normal

The result of the analysis showed that the Kolmogorov-Smirnov normality for the data of science students' anxiety is 0.062. It is greater than 0.05. Its consequence is H0 is accepted. It means that the data distribution is normal.

The next assumption is homogeneity test. Hypothesis used in the test for homogeneity test is as follows:

H0: Variance data of science and social groups is homogenous

H1: Variance data of science and social groups is not homogenous

By using Levene's test, the result of the analysis is 0,711. It is greater than 0.05. Its consequence is H0 accepted. It means that the data variation of science and social groups is homogenous.

After testing the assumptions, the data was continued to be analyzed by using different average test. The analysis is done by using the independent sample t-test. The analysis made use of the data of high school students 'anxiety in Yogyakarta province facing CBT national exams in natural and social science. This test aimed to determine whether or not the major of the students have influence to the anxiety level of senior high school students. The hypothesis in this analysis is:

H0:  $\mu_1 = \mu_2$  (There is no significant influence between the anxiety level and the major, natural and social science, of the senior high school students in Yogyakarta province regarding the CBT national examination)

H1:  $\mu_1 \neq \mu_2$  (There is a significant influence between the anxiety level and the major, natural and social science, of the senior high school students in Yogyakarta province regarding the CBT national examination)

The result of the analysis is significant with the value of 0.091. It is greater than 0.05. Its consequence is H0 accepted. It means that there is no significant influence between the anxiety level and the major, natural and social science, of the senior high school students in Yogyakarta province regarding the CBT national examination. Students majoring in natural or social science feel the same anxiety as they face the CBT national exam. The level of anxiety faced by both major is also not very different. This is because there is no difference in treatment regarding the implementation of CBT national examination between students of both major. Natural and social science carry the same CBT test for preparation (known as try out test), the same implementation schedule, the same schedule for the result, the same possibilities that can occur when the CBT national exam is implemented, such as problems about the electricity, computers, or networking. Besides that, each of the students from both majors has personal goals that must be achieved on the national exam. The determination of these targets can trigger their anxiety, and it appears on each student of both majors. In addition, students of both groups had to control their anxiety when facing the new computer-based national examination.

#### IV. CONCLUSIONS AND SUGGESTIONS

##### A. Conclusions

Based on the research results, there are two points that can be concluded from this study. The first is that the anxiety level of the senior high school students in Yogyakarta province in facing CBT national exams is categorized into the medium level. Students of natural science and social science major's anxiety level is also concluded to be in medium category. The second, there is no significant influence of major, which were natural science and social science, with their anxiety level of the senior high school students in Yogyakarta province.

##### B. Suggestions

Regarding this study, there are some suggestions. For a better study conducted in the future, it is suggested to the researcher to have bigger number for the sample and population, so that the scope of the research can cover wider research range. Moreover, it is suggested to have more variables in the study, so that the research can be seen in a wider point of view.

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