

# Implementation of Computer Based National Exam (Multi-sites Study in SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana Barito Kuala)

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# Implementation of Computer Based National Exam (Multi-sites Study in SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana Barito Kuala)

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**Abstract:** This study purpose to describe implementation of computer-based national exam in SMAN 2 Banjarmasin and SMAN 1 Mandastana Barito Kuala on aspects of communication, resources, disposition, bureaucratic structure and its obstacles. The study method is descriptive qualitatif. The data collection techniques are observation, documentation and interview with some informant, so it can explain the research focus about the implementation of the computer-based national exam on aspects of communication, resources, disposition, bureaucratic structure and its obstacles. The study results on aspects of communication, resources, disposition and bureaucratic structure has been run based on SOP (Standar Operational Prosedure) of national exam the academic year 2017/2018 number 0044/P/BSNP/XI/2017 issued by BSNP referring to Ministerial Regulation No. 4 of 2018, however, the available resources are still considered inadequate. Especially means for the implementation of the computer-based national exam. Researcher suggests that the government should improve the facilities of the computered based national exam and its supporting, both at the central and in the region country, so the case of central server was down, power outages, and internet network problem is not happened again in the upcoming computer based national exam.

**IndexTerm:** Implementation of computer-based national exam

## I. INTRODUCTION

The introduction of computer-based testing in high-stakes examining in higher education is developing rather slowly due to institutional barriers (the need of extra facilities, ensuring test security) and teacher and student acceptance [1]. Computer-based testing is the use of information technology for any assessment related activity. It allows educators and trainers to author and schedule surveys, quizzes, tests and exams to be administered through the computer system and responses are electronically recorded and assessed [1]. The preparation is not free either, for example; the infrastructure should be prepared and invested such as the internet, computer, and network. The problem is when the infrastructure cannot be achieved [2].

Each level of schools needs to conduct an evaluation in order to know the extent of the learning objective is attained. This evaluation is not only conducted by the school but also by the government. One of evaluation forms conducted by the Indonesian government is the national examination for students at the final year of each level of education [4]. Education is an important thing to be able to realize the quality and quantity of human resources, with the education of an individual is demanded to be able to be a person who is ready and able to compete in the era of globalization, can develop the talents and potential that is in him [5]. In a developing country like Indonesia, adopting a computer-based test (CBT) in high school is challenging. The CBT lab preparation, lab policy, student learning challenges, and staffing preparation [2]. In CBT, testing is done in person, on a computer, at an approved testing center [5]. National exam of high school in Indonesia has several changes which were in line with the education curriculum changes. Examination as we know is one of the best methods of evaluating knowledge and grade student's ability understanding of what he/she was taught in the classroom [6]. Evaluation and refinement of the national exam continues to be carried out to illustrate the level of achievement in the education system. The Ministry of Education and Culture who has the authority in the implementation of national exam always evaluates and attempts to improve the system on the implementation of national exams because it is realized that the quality of education outputs depends on implementation of the national exam system. National Exam is one of educational evaluation activities in the form of student learning result evaluation, through measuring and assessing the achievement of national graduate competency standards on certain subjects set by the government. National exam are also used as an educational evaluation for mapping the education quality to make national education policies.

National Exam which in practice usually only apply paper-based national exams. This system is considered to have many shortcomings, so there are new policies related to the implementation of national exams in the 2014/2015 academic year, namely the national exam can be carried out in 2 ways. First, paper based nasional exam. Second, computer based national exam. This policy continued for the 2015/2016, 2016/2017 and 2017/2018 national exams. The difference of two methods lie only in the technical aspects of the implementation. On the paper based national exam, government carried out the replication and distribution of national and the answering of questions by students using paper. While the computer based national exam for the replication, distribution and answering of questions by students using computers directly.

Computer based national exam is an alternative to overcome the weaknesses of paper-based national exam. The weaknesses of the paper-based national exam as follows [1] : "The form of questions used at the time of the exam is difficult to make varies;

limited question display; only two dimensions; a lot of paper is needed and the copying costs are quite large; securing confidentiality of questions is relatively difficult and requires considerable costs; the result processing requires a relatively long time".

This computer-based national exam can also minimize delays, cheating during exams, and test results can be known quickly. Therefore, the solution of the problem is to use computer technology. The exam conceptually do not use absolutely online methods that require an extensive internet network connections. The implementation uses a semi-online system that is the questions of being sent from the central server online through a network (synchronization) to the local server, then the exam is served by a local server offline. Then the exam results are sent back from the local server to the central server online (upload).

The National Exam held for the 2017/2018 academic year refers to, namely:

1. Government Regulation Number 4 of 2018 concerning Government Assessment of Learning Outcomes and Assessment of Learning Outcomes by the Education Unit.
2. National Education Standards Agency Regulation Number 0044 / P / BSNP / XI / 2017 concerning Standard Operational Procedure (SOP).
3. Decision letter of the Head of the South Kalimantan Province Education and Culture Office number 0030.a of 2018 concerning the determination of the computer based national exam implementing for senior High School and vocational High School.

Data 2018 from the Education and Culture Office of South Kalimantan are 184 public and private high schools consisting of 146 independently implementing and 38 joined with other schools. Number of high schools in Banjarmasin 28 public and private high schools. Consisting of 25 independently and 3 joined other schools, while in Barito Kuala there were 18 public and private high schools consisting of 16 independently and 2 joined other schools. SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana are among the schools. This study took a place in SMA N 2 Banjarmasin and SMA N 1 Mandastana Barito Kuala. Hoping of this study, researchers can describe the implementation of the Computer Based National Exam in 2018 from the two schools on aspects of 1) Communication, 2) Resources, 3) Disposition, 4) Bureaucratic Structure, 5) Its Obstacles. SMA Negeri 2 Banjarmasin has carried out Computer-Based National Exams in the 2015-2016, 2016-2017 and 2017-2018 academic year, while SMA Negeri 1 Mandastana Barito Kuala is the first time.

## RESEARCH PURPOSES

The purpose of the study is to describe the implementation of computer-based national exam in SMA Negeri 2 Banjarmasin and SMA N 1 Mandastana Barito Kuala on aspects of communication, resources, disposition, bureaucratic structure and its obstacles.

## II. LITERATURE REVIEW

The success or failure of a policy implementation is influenced by 4 factors, namely: communication, resources, disposition, and bureaucratic structures. According to Edward III, communication is [2] : "The first requirement for effective policy implementation is that those who are implement a decision must know what they are supposed to do. Policy decisions and implementation orders must be transmitted to appropriate personal before they can be followed. Naturally, these communications need to be accurate, and they must be accurately perceived by implementors. many obstacles lie in the path of transmission of implementation communications". So communication greatly determines the success of achieving the objectives in a policy implementation. Resource is : "No matter how clear and consistent implementation orders are and no matter how accurately they are transmitted, if the personnel responsible out policies lack the resources to do an affective job, implementation will not be effective. important resources include staff of the proper size and with the necessary expertise; relevant and adequate information on how to implement policies and on the compliance of others involved in implementation".

Disposition is the success of policy implementation can be determined by the available resources, because resources are a driving and implementing resource. Disposition is : "The dispositions or attitudes of implementation is the third critical factor in our approach to the study of public policy implementation. if implementation is to proceed effectively, not only must implementors know what to do and have the capability to do it, but they must also desire to carry out a policy". The attitude of the implementation are an important factor in policy implementation. If the implementation wants to be effective, then the implementors must not only have the ability to implement it, where the quality of a policy is influenced by the quality or characteristics of the implementors. The success of a policy can be seen from the disposition.

Bureaucratic structure is : "Policy implementors may know what to do and have sufficient desire and resources to do it, but they may still be hampered in implementation by the structures of the organizations in which they serve. two prominent characteristics of bureaucracies are standard operating prosedurs (SOPs) and fragmentation." Even though the sources for implementing a policy are available or the implementors know what should be done and have the desire to implement a policy, it is likely that the policy cannot be implemented because of weaknesses in the organization structure. Bureaucracy as executor must be able to support policies that have been decided politically by coordinating well.

## III. METHOD

### RESEARCH OBJECT

This study took a place in SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana Barito Kuala.

## IV. ANALYSIS METHOD

The study approach is a qualitative approach. This type of study includes descriptive. Furthermore, the study design is qualitative study with multi-sites design. This study took a place in SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana. The study results are in the form of narrative sentences from the analysis of data from interviews, passive participatory observation

and documentation studies on the implementation of computer-based national exams on aspects of communication, resources, disposition, bureaucratic structure and its obstacles.

Data collection used the literature study techniques and the field study in the form of observation, documentation and interviews. The data obtained is then analyzed qualitatively based on the obtained data. Data collected in the qualitative study included observational data, interviews, and documentation. The type of data in the study are primary data and secondary data.

Primary data is data in the form of oral speech and human behavior, while secondary data is sourced from writings, recordings, pictures or photographs that are closely related to the study activities [3]. The informants included :

1. Head of Curriculum and Assessment section of high school in the Department of Education and Culture of South Kalimantan province.
2. Principal of SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana Barito Kuala.
3. Secretaries of the computer-based national exam committee from the two schools.
4. Proctors of the two schools.
5. Students from the two schools.
6. Students' parents of the two schools.

Secondary data are documents from SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana Barito Kuala that are related to the study focus, namely the government regulation No. 4 of 2018, the 2017 Standard Operational Procedure, the two schools dates, and the reports of the computer based national exam of the two schools.

## V. RESULTS AND DISCUSSION

Description of the implementation of computer-based national exam (multi-sites study in SMA Negeri 2 Banjarmasin and SMA Negeri 1 Mandastana Barito Kuala on aspects of communication, resources, disposition, bureaucracy structure and its obstacle, namely :

### a. Communication

Communication shows an important role as a reference in other to the implementors must know what they are supposed to do [2]. It means that policy decisions and implementation orders must be transmitted to implementor before they can be followed so that policy implementation does not come out of the desired target. Thus, these communication must be accurate and understood carefully by the implementors.

Communication was carried out in the form of Socialization of Computer-Based National Exam by the Banjarmasin Office of Education and Culture which was attended by SMA N 2 principal on March 5th, 2018 placed in SMA Negeri 1 Banjarmasin. Socialization is also carried out by the school to students in the flag ceremony and socialization to students' parents on December 21st, 2017 in the school hall. Communication in the form of training for proctors and technicians held by Department of Education and Culture of South Kalimantan is only for the beginner schools implementing the computer based national exam, so this school was not included invited as participants. Its Proctors and technician only follows the computer based national exam tutorials on youtube website.

While the socialization of computer based national exam by Department of Education and Culture of South Kalimantan province was attended by the principal of SMA Negeri 1 Mandastana as the chairman of MKKS (Principal Working Meeting) on March 9th, 2018 in the Treepark hotel. The socialization was also conducted by the school to students in the flag ceremony and socialization to students' parents on December 22, 2017 in the school hall. Communication in the form of a workshop was attended by the school's proctors and technicians, which was organized by MKKS in SMA Negeri 1 Tabukan on 31st March 2018. The communication carried out by the implementors of the computer based national exam is in accordance with the 2017/2018 academic year SOP Number 0044/BSNP/XI/2017.

### b. Resource

Important resources include staff of the proper size and with the necessary expertise; relevant and adequate information on how to implement policies and on the compliance of others involved in implementation [2]. Thus, resources have an important role in implementation, because no matter how clear and consistent implementation orders are and no matter how accurately they are transmitted, if the personnel responsible out policies lack the resources to do an affective job, implementation will not be effective.

The principal of SMA Negeri 2 as the chief determine the composition of personnels consisting of chairman, secretary, treasurer, 3 members, 7 proctors and 1 technician on March 28th, 2018 and was authorized by the Department of Education and Culture of the South Kalimantan Province. Personnels prepared infrastructure, namely 147 client computers, 9 servers, ISP internet connection (PT Telkom Indonesia), customer number 1622011301119, type of fiber optic connection 100 mbps speed and 8 UPS, as well as 7 test rooms. Proctors and technician installed the computer based national exam system on server computers and client computers before simulation 1.

The principal of SMA Negeri 1 determined the composition of personnels consisting of chairman, secretary, treasurer, 4 members, 2 proctors and 2 technicians on January 5th, 2018, and approved by the Department of Education and Culture of the South Kalimantan Province. The personnels prepared infrastructure, namely 67 client computers, 4 servers, ISP internet connections (PT. Insan Sarana Telematika), 10 mbps VSAT connection types, 2 UPS, and 2 exam rooms before simulation 2. The resources of the two schools are the implementors have worked based on SOP of National exam, while the infrastructure available are in accordance with the SOP.

### c. Disposition

Disposition is defined as the attitude of implementation to implement the public policy [2]. In implementing a policy, if you want to succeed effectively and efficiently, the implementors not only have to know what to do and have the capability to do it, but they must also desire to carry out a policy. So, a consistent attitude determines the success or failure of policy implementation.

The attitude of the implmantors of the two schools can be seen from their responsibilities before and during the exam implementation. The personnels have carried out all procedures of the implementation properly in accordance with the SOP of National exam which regulates the implementation of computer based national exam on 2017/2018 academic year.

### d. Bureaucratic Structure

According to Edward III, this variable has an impact on policy implementation that it will not succeed if there are weaknesses in the organizations structure. There are two prominent bureaucratic characteristics are standard operating prosedurs (SOPs) and fragmentation

The principal of SMA Negeri 2 as a chief conducted four limited meetings to coordinate with the personnels of computer based national exam commitee. Meetings were held before simulation 1, 2, pre exam and the exam. He gave the division of jobs to the personnels, while the principal SMA Negeri 1 always monitored and gave direction to the personnels and also gave the division of jobs to personnels.

Based on BNSP regulation Number 0044/P/BSNP/XI/2017 concerning Standard Operational Procedures. On National Exam Implementation 2017/2018 academic year, there are 3 stages, namely :

- 1) Preparation:
  - a. School Data Collection,
  - b. Determination of high schools implementing the computered based national exam
  - c. Distribution students in the exam room and exam session,
  - d. Determination of the exam schedules
- 2) Pre-exam
- 3) exam

The two schools proctors filled in the data of participants at the address <http://pdun.data.kemdikbud.go.id>. The Schools must also fill in the form on the computer based national exam website of Ministry of Education and Culture which is located at <https://ubk.kemdikbud.go.id>, which is a form for schools that want to carry out computer-based national exam in the academic year 2017/2018. The contents of the form are school biodata, list of names of proctors and technicians, infrastructure (number of main servers, number of backup servers, number of clients computer, internet connection, arrangement of rooms and sessions).

Head of the Education and Culture Office of South Kalimantan province with number 0030.a of 2018 determined high schools/vocational schools implementing the computered based national exam independently or joined with other school. There were 420 exam participants from SMA Negeri 2 Banjarmasin, 7 exam rooms which was consisted of 20 participants each room. The exam was divided into 3 sessions for one subject in one day, while SMA Negeri 1 Mandastana consist of 125 participants. This participant was added to the exam participants from SMA Negeri 1 Jejangkit who was joined with SMA Negeri 1 Mandastana participants. The participants was 53. The exam used 2 exam rooms. It was divided into 3 sessions for one subject in one day.

Table 1. Number of the computer based national exam participants  
For 2017/2018 academic year SMA Negeri 2 Banjarmasin

No	Gender	Bahasa dan Budaya	IPA	IPS	Amount
1.	Male	4	100	92	196
2.	Female	18	105	101	224
	Total	22	205	193	420

Source: Document of SMA Negeri 2 Banjarmasin (2018)

Table 2. Number of the computer based national exam participants  
For 2017/2018 academic year SMA Negeri 1 Mandastana

No	School	Natural science major	Social science major	Amount
1	SMANegeri 1 Mandastana	64	61	125
2	SMA Negeri 1 Jajangkit	30	23	53
	Total	94	84	178

Source:: Document of SMA Negeri 1 Mandastana (2018)

The exam schedule has been determined by the Central Government, which is carried out simultaneously throughout Indonesia It was conducted for 4 days. There was one subject that is tested everyday. Simulation 1, 2 and pre-exam were given before the implementation exam. They were held directly by the central government simultaneously at all high schools which would be participants on the computered based national exam. The first Simulation on 13-15 November 2017, The second Simulation on 7 and 8 February 2018 and pre-exam on 12-14 March 2018. The tested questions was from Puspendik obtained through the synchronization process before the implementation day. All of these activities are conditioned exactly as the official exam. namely: synchronization, answering questions until the process of uploading the results of the participants' work using the computer based

national exam application. In order to provide an original description of the mechanism which will be implemented later. As well as being used as evaluation material so that it can be immediately followed up.

The synchronization was carried out before the exam implementation on 6-7 April 2018. There were 22 persons directly involved on the exam implementation in SMAN 2 Banjarmasin. Consisting of 14 supervisors alternating for 3 sessions in seven exam rooms, 7 proctors and 1 technician. Each exam room has 1 supervisor and 1 proctor while 1 technician is outside of the room. Meanwhile, there were 8 persons directly involved in the computer based national exam implementation in SMAN 1 Mandastana. It consists of 4 supervisors alternating for 3 sessions in two exam rooms, 2 proctors and 2 technicians. Each exam room has 1 supervisor and 1 proctor while 2 technicians are outdoors. The two schools' personnels have worked based on the SOP of National exam 2017/2018 academic year.

Obstacles that occurred in SMA N 2, namely:

- 1) There are several client computers that cannot be used for 3 sessions so they log out alternately.
- 2) The central server is down, occurs on April 9th 2018 session 2 room 2 and in session 3 room 6 about 10 interferences.
- 3) The power outage was 20 minutes on April 10th 2018 session 2 and in session 3 room 2 and 6 the client computer broke up.
- 4) The server could not stand on April 11th 2018 so that in session 1 room 5 there were 2 participants who did not hear the play button about the English listening test (ng) about 5 minutes and Session 2 room 5 there was 1 participant who did not hear the play button about English listening questions no 1-3.
- 5) The main server has a virus on April 12nd, 2018 in session 3, room 3, the exam is delayed about 1/5 hour.
- 6) The technical problems disrupted participant mental.

Obstacles that occurred in SMA N 1, namely:

1. Lack of exam rooms because the number of participants in each room exceeds 20 participants.
2. Mental disruption of participants due to technical problems of the computer based national exam.
3. There are several computers that can not stand for 3 sessions. So they often log out alternately.
4. The power outage 1/5 hour on April 10th, 2018, meanwhile Genset can't stand because it's small.
5. When the power outage, there is a short circuit on the server on April 11st 2018.

## 6. CONCLUSION

Implementation of Computer-Based National Exam in SMA Negeri 2 Banjarmasin and SMA N 1 Mandastana on aspects:

### 1. Communication

The implementation has been carried out in accordance with the SOP 2017/2018 academic year, such as socialization conducted by the Department of Education and Culture of the Province of South Kalimantan and the Education and Culture Office of Banjarmasin city also the socialization carried out by these two schools to students and parents of students.

### 2. Resources

The available resources in both of the schools consisted of the committee along with the proctors and technicians and infrastructure that have fulfilled the requirements for the exam implementation. However, sudden obstacles such as power outages, internet network disconnection, and server down are unavoidable because of the number of high school implementing the exam in Indonesia is almost 70% with the same implementation schedule.

### 3. Disposition

The attitude of the implementor in the exam implementation of these two schools has a high responsibility in carrying out the job instructed by the government through government regulation no. 4 of 2018 guided by national exam SOP Number 0044/ P/ BSNP/XI /2017.

### 4. Bureaucratic Structure

The bureaucratic structure of the two schools in the exam implementation was seen from the implementors have understood and carried out all duties and their good coordination or cooperation in the implementation of each duty.

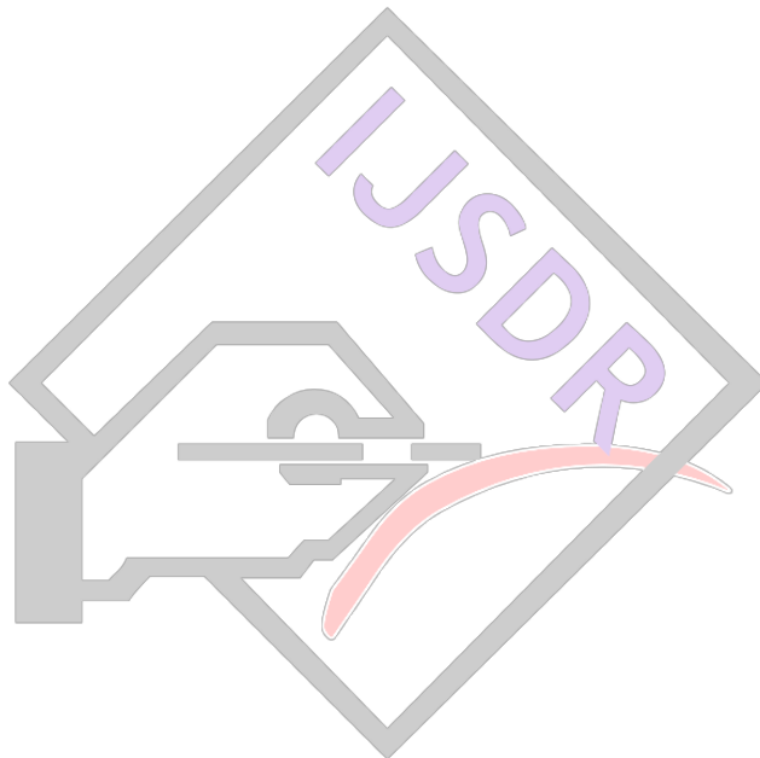
### 5. The obstacle

Problems during the exam implementation in both of the schools, namely, infrastructure of computered based national exam, power outages, and mental disruption for students due to technical disruptions.

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