

Challenges and opportunities in implementing Computer Based Test (CBT) of national assessment for non-formal education

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ABSTRACT: Computer Based Test (CBT) in National Assessment for Non-formal Education as new policy of the Ministry of Education and Culture has been implemented in 2017. The purpose of this study was to analysis the implementation of CBT for national assessment in terms of policy and technical implementation for non-formal education. This study used a qualitative method. Interviews, observation and document analysis were carried out as data collection technique. The results of this study showed that the policy of CBT implementation in national assessment for non-formal education faced challenges in facilities in relation to technical problems, students' competences in computer skills, and stakeholders' engagement. However, the policy has provided opportunities in non-formal education quality in improvement of assessment system, students and teachers competences, and non-formal education database system. Therefore it needs improvement for further implementation for all non-formal education institutions throughout the nation..

1. INTRODUCTION

As a consequence of standard driven reform, the government of Indonesia has implemented standard based education since 2003 for improving the education quality, including non-formal education. The national education standards consist of 8 standards which are graduates competency, content, process, assessment, facilities and infrastructure, educators and education personnel, management, and finance standards. In the context of non-formal education, the national assessment as part of standard based education has been implemented along with formal education in 2005 and in 2015, the use of computer based test (CBT) for national assessment has been started for formal education.

Since 2017 onward, Board for National Standard in Education (BSNP) and the Ministry of Education and Culture stated that the implementation of national assessment for non-formal

education is conducted in the form of Computer Based Test or CBT (BSNP, 2017). According to American Educational Research Association (2014) computer-based test or computer administered test is a test administered by computer; that indicates test takers respond by using a keyboard, mouse, or other response devises. In broader concept, the implementation of CBT in national assessment is also seen as the means to revolutionize education and build human character (Noor, 2008).

In addition to the influence of assessment in students' learning and teaching approaches has been recognised in research and different literature (Carrillo-de-la-Peña and Pérez, 2012). Therefore, the different ways of conducting assessment could provide possible negative effects of testing on students: anxiety, categorizing and labelling the students, damaging students'

self-esteem, and creating self-fulfilling prophecies (Linn & Miller, 2005). Wass, Van der Vleuten, Shatzer, and Jones (2001), it is well known that students adjust their learning processes according to the particular type of assessment used. Therefore, assessment should be meaningful for encourage students' learning, including non-formal education in Indonesia.

Prior to 2017, the national assessment for non-formal education was conducted in the form of paper and pencil based test (PBT). There are certain consideration factors of implementing CBT for non-formal education. According to BSNP report on monitoring and evaluation of national assessment, CBT is considered more effective and efficient than PBT in terms of time, cost, energy, and human resources (BSNP, 2016). In terms of CBT application used in the national assessment, CBT application is user friendly and simple. In the globalisation, young generations have been familiar of using computer, therefore they shouldn't have difficulty in taking CBT as the assessment mode. From the participants' perspective, the students prefer to take national assessment with CBT rather than PBT, since its technically easy to choose and change the answers without using pencil. Thus, students can focus more on answering the national assessment.

In addition, from the perspective of implementing committee duties and responsibilities, CBT is more efficient in terms of time, material preparation, scanning (scoring?), and delivery of test results. It is reduce the long chain of process including auction and distribution which involving different parties, including the police. For the school principals as the head of the assessment committee, they do not need to distribute the assessment material from the centre storage to the District Education Office.

From the perspective of technical process, its minimise lack of assessment number, there is no shortage of assessment questions or manuscript errors as often happens in PBT, for

example, the title on the envelope does not match the contents of the envelope. In terms of assessment items, PBT items can only be used once, while CBT items can be used more than one because all the questions are stored inside the computer and are encrypted. Thus, the confidentiality of the assessment items in CBT becomes assured. With regard to item variation or package, item packages for PBT are very limited. So far, the item variation consisted of 20 item packages in accordance with the number of examinees in one room. Conversely, for CBT the item package is unlimited, because it is a computer generated items. The implication is, with the availability of various assessment items, CBT can be implemented at any time, in accordance with the readiness of learners.

In terms of scoring, technically, the results of CBT can be obtained after the participants completed the questions. However, considering there is also PBT mode of assessment and students' psychological condition, therefore the CBT results are released along with the PBT results. Finally, in terms of integrity, it was able to reduce number of students' cheating, since each students work on different questions (BSNP, 2015).

Despite numerous advantages of CBT over PBT as mentioned above, there are several challenges from different stakeholders, such as teachers or tutors, parents, students, and school principals. They were resistant and reluctant to conduct CBT in national assessment. Infrastructure and facilities limitation, computer illiteracy, shortage of electricity power supply and access to schools, were considered as the challenges.

This study was carried out to analysis the implementation of CBT for national assessment in terms of policy and technical challenges for non-formal education. Therefore this study addressed the following research questions: (a) What are the policies of national assessment for non-formal education?, (b) What are the challenges faced in implementing CBT for non-formal education?, and (c) What are the

opportunities faced in implementing CBT for non-formal education?

1. METHODS

This study employed a qualitative method. Document analysis, interviews, observation and were carried out as data collection technique. The documents of national education system law, government regulations, ministry regulations, and other documents related to national standard of education and standard operating procedure of national assessment issued by BSNP were analysed. The techniques of comparing, contrasting, criticizing, and synthesizing were applied in analyzing the data.

Interviews involved examinees, teachers, and other stakeholders of non-formal education. They were asked about their opinions on issues related to the national assessment. The student interviewees selected in this study were based on the subject interest, namely sciences and social sciences. For interview purpose, guideline and structured questions were prepared and about 30 minutes were taken for each respondent.

Observation was conducted during the national assessment period in selected schools in certain provinces, such as Jakarta, Central Java, East Java, Bali, and South Kalimantan. The purpose of this observation was to gain information on students' behavior during the implementation of national assessment. It was also aimed to find out the obstacles faced during the implementation of national assessment.

2. FINDINGS AND DISCUSSION

In this section, findings of the study are presented according to the research questions in challenging and opportunities of CBT in national assessment for non-formal education.

According to Article 26, Law No. 20 year 2003 about National Education System, non-formal education is provided for Indonesian citizens who need

education services as replacement, improvement or complementary of formal education in order to promote life long education. Non-formal education serves to develop the potential of learners with an emphasis on mastery of knowledge and skills and the development of professional attitude and personality. Non-formal education includes life skills education, early childhood education, youth education, women's empowerment education, literacy education, vocational education and job training, equality education, and other education aimed at developing learners' abilities. Non-formal education units consist of courses, training institutions, study groups, community centers, and community religious studies, as well as similar educational units. The results of non-formal education can be considered as equal to the outcome of a formal education program after going through an equivalency assessment process by an agency designated by the Government or local government with reference to the national standard of education.

In this study, taking into consideration the above mentioned definition of non-formal education, the term of non-formal education is specifically defined as equity education and non-formal education units in this study are limited to the Community Learning Center (PKBM). Data from Center for Educational Assessment show that there are 5.476 PKBM across the nation (Puspendik, 2017).

Non-formal education is provided for educational equity. According to Nizam (2017) characteristics of equity education can be categorized into two things. First, the nature of equity education, in general, its learning process is done by andragogy approach, although in reality there are learners who are of school age. Second, the learning process is implemented in part-time basis (self-paced learning), although there are education units which implement full time schooling. Third, learners have the motivation to learn. In terms of service,

equity education has flexible, adaptive, and ubiquitous learning.

In addition, The Law No. 20 year 2003 revealed in the context of education quality assurance, evaluation, accreditation and certification are carried out. Evaluation is conducted in the framework of national quality control of education as a form of public educational accountability. Evaluation is conducted on students, institutions, and education programs for both formal and non-formal education including all levels, units, and types of education. Evaluation of learning outcomes is conducted by the education units to monitor the process, progress, and improvement of student learning outcomes in long terms basis. The evaluation of students, education units, and educational programs is carried out by independent institutions on a regular, comprehensive, transparent and systemic basis to assess the achievement of national education standards.

2.1. Policies of national assessment made by BSNP and Ministry of Education and Culture for non-formal education

The national assessment policy its related to the task of BSNP as the government board which collaborate with Puspendik. According to Government Regulation No. 19/2005, one of the tasks of BSNP as a self-reliant, professional and independent agency is to organize the national assessment. The regulation further stated that national assessment is held to measure the achievement of graduate competence at the level of elementary and secondary level. National assessment results are used for mapping the quality of education, selection at higher levels of education, as well as the basis for delivering assistance and educational funding.

The implementation of national assessment in 2017 refers to the Regulation of the Minister of Education and Culture No. 3 of 2017 about the assessment of learning outcomes by the Government and assessment of learning outcomes by the education units. In its

detailed and practical implementation, BSNP issued regulation Number 0043/P/BSNP/I/2017 about Standard Operating Procedures of National Assessment Year 2016/2017. With this regulation and policy, national assessment is expected to be more credible, acceptable, and accountable.

The policies issued by BSNP and the Ministry of Education and Culture related to the national assesment for equity education are as follows. In term of the registration requirements of national examinees, since 2015, national assessment participants must be enrolled in Data of National Education (DAPODIK) under the Ministry of Education and Culture. For students in order to be enrolled in DAPODIK, are required to have a National Student Identity Number (NISN), whereas the education units must have an Education Unit Number (NPSN). The enforcement of these requirements is intended to ensure that national assessment participants from non-formal education follow the learning process conducted by the education units.

Then from the number of subjects assessed in the national assessment, there are seven subjects for the C program majoring in social sciences, namely Indonesian language, Geography, Mathematics, Sociology, English, Economics, and Civic Education. While for students majoring in natural science, the subjects include Indonesian language, Chemistry, Mathematics, Biology, English, Physics, and Civic Education. The national assessment subjects for the B package program consists of five subjects namely, Indonesian language, Civic Education, Social Sciences, English, and Natural Sciences.

In addition to assessment mode, in 2017, the CBT was carried out for the national assesment of non-formal education. This policy was taken BSNP through meetings together with Center for National Assessment (Puspendik), Agent for Research and Development (Balitbang), and Directorate Jenderal for Early Education and Non-formal

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Education. The policy aims to improve the quality of national assessment implementation for non-formal education. Considering the condition of PKBM which still need further development on infrastructure and computer facilities, the implementation of CBT for non-formal education was implemented by resource sharing. PKBMs which do not have computer facilities can join formal education units, such as junior secondary schools, senior secondary schools, and vocational secondary schools.

In terms of time table, national assessment for non-formal education was conducted on weekend, Saturday and Sunday. This is intended to provide opportunities for those students who work during the weekdays. Before 2017, when the assessment was held on weekdays, as a consequence, the students can't attend because they did not get permission from employers.

For assessment timeline, in 2017, unlike formal education, for non-formal education there was no subsequent national assessment for those unable to take the assessment on given stipulated time table, which is normally done a week after the main assessment. However, non-formal national assessment was done in two waves, ie in April and May for Packages C and B, as well as in October. Thus, those who were unable to take the national assessment in April or May can take the assessment in October.

In terms of invigilation, assessment invigilators were assigned cross-over PKBM, involving teachers and tutors. Finally, from the perspective of national assessment organizer, unlike the previous years, from 2017 onward, the authority of execution of the assessment is returned to each educational unit (PKBM). Prior to this, considering many PKBMs that have not been accredited, the authority of national assessment implementation is given to the District Education Office. In short, policies for national assessment of non-formal education are summarized in Table 1 (BSNP, 2017).

Table 1: Policies for National Assessment of non-formal education

| Aspect | 2016 | 2017 | Remarks |
|---------------------------------|-----------------------------------|----------------------------------|-----------|
| National Assessment Requirement | Registered in DAPODI K | Registered in Dapodik | Same |
| Assessment mode | Paper and Pencil based test (PBT) | Computer Based Test (CBT) | Different |
| Time table | Weekdays, Monday to Friday | Weekend, Saturday and Sunday | Different |
| Invigilation | Not cross-over PKBM | cross-over PKBM | Different |
| Assessment organizer | District Education Office | Accredited Education Unit (PKBM) | Different |

The policy of CBT implementation for non-formal education were not difficult to be conducted by PKBM. For PKBM that have at least one server and computer devices more than 20 pieces can be set to be the implementing agency UNBK. This policy is clearly stipulated in the national assessment standard operating procedure (SOP) as well as clearly mentioned in Circular Letter (SE) Minister of Education and Culture No. 1 of 2017 on Implementation of National Examination Year 2016/2017 that sent to Governor and Regent / Mayor.

In a circular letter issued on January 10, 2017 the Minister also emphasized a step to optimize the use of computers for national assessment through resource sharing schemes. The scheme encourages local education offices to allow students from schools with limited infrastructure to sit for national assessment using CBT in other schools within a radius of a maximum of five kilometers.

In addition, there are different roles of educational units, school committees, parents, education offices, and colleges. School committees and parents collaborate in provide the laptops and

computers for the CBT. If a school does not have sufficient server and computer facilities for CBT, the principal may apply to a local education office to conduct CBT using resource sharing scheme. Schools and school committees should not charge students or parents for computer procurement to support CBT implementation. Basically, the use of computers is intended to support computer-based learning process. In addition, the local governments allocate Regional Expenditure Budget (APBD) for education for computer procurement for schools that have not been able to implement computer-based learning process which can then be used in the implementation of CBT. The local government also mapped schools that were included in resource sharing in the implementation of CBT (Kemdikbud, 2017).

According to national assessment SOP issued by BSNP there are three paths, namely the school applying for the implementation of CBT to the District / City Education Office or Provincial Education Office. Second, the District / Municipal Education Office or Provincial Education Office verifies and establishes the CBT organizing school. Third, the school conducts the exam simulation of the examinees and then conducts the exam with CBT (BSNP, 2017).

The procedure of CBT implementation (semi online) consisted of four paths. First, the exam questions are sent online from the central server to the school server via the internet (synchronization). Second, exam tokens were sent online from the central server to the school server. Third, the test was executed offline through the school server and student computer (client). Fourth, the results of the exam are sent online from the school server to the central server (uploaded results).

2.2. The challenges faced in implementing CBT in Indonesia national assessment

To address the second research question: What are the challenges faced in implementing CBT in Indonesia national assessment, interviewed with teachers, students, school principal, and examination authority was done. The challenges were classified into four categories, namely national standards of education for non-formal education, human resources, infrastructure, and resistant attitudes among learners and PKBM managers. The national standards of education are considered as a reference in developing curriculum structure of non-formal education. However, the national standards of education for non-formal education has not been developed yet. Therefore, graduate competence standards and content standards for non-formal education still apply the standards for formal education. This policy is considered unfair, since non-formal education has different characteristics from formal education.

Then, the majority of PKBM has not been accredited, whereas one of the basic requirements for educational units to be able to conduct national assessment is that PKBM should be accredited. As a consequence, non-accredited PKBM have to join other PKBM or schools in order to organize national assessment. However, in appointing school units where non-accredited PKBM join the national assessment, also created another problem. The problem is that accredited school units applied certain charges based on the number of students taking national assessment. Due to these extra expences, many PKBM widrawed from emplementing CBT to PBTm because they could not afford to pay the additional charges.

In the challenge of human resources. Most PKBM are owned and run by private sectors or community member with various financial and infrastructure constraints. Surprisingly, these limitations are sometimes used by PKBM managers to benefit from learners in different ways. For example, learners who do not follow the learning process regularly are allowed to take national

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assessment as long as they pay certain amount of money to PKBM managers. In short, there is educational commercialization, while learners come from low-class economic societies.

In terms of learners, majority of them were from low-income society. This social economic status affected their ability to pay tuition fees. Many of them were unable to pay tuition fees on time and even some of them who paid with staple food from the rice field or garden. Another characteristic of non-formal students is the fact that they were already working or dropping out of schools. This conditions made them unable to take part learning process effectively.

In addition to infrastructure and learning facilities, the majority of PKBM did not have sufficient computer units as required by BSNP in the implementation of CBT. This problem can be solved by resource sharing. However, another problem emerged, that is the distance between the place where learners stay and PKBM location is far away. The place of national assessment is located in the city, whereas the learners are in the village as so they have to make extra time, effort, and cost. This finding supported a previous study by Boeve, Meijer, Albers, Beetsma, and Bosker (2015) who found that certain barriers in implementing CBT such as the additional need for adequate facilities, test-security, back-up procedures in case of technological failure, and time for staff and students to get acquainted with new technology.

Finally, the biggest challenge is the attitude of the managers and learners who are still reluctant to change from PBT to CBT. For them CBT is considered to cause anxiety and fear because their ICT literacy level is low, so they are afraid to fail the exam. Therefore, their acceptance of CBT is very low. This finding is consistent with a previous study done by Boeve et al. (2015) who found that students preferred PBT because the test taking experience is substantially different from CBT. A study by Hochlehnert et al. (2011) in the German higher education context showed that only 37% of students voluntarily chose to take a high-stakes exam via the computer, and that test-taking strategies were a reason why students opted for the paper-based exam.

Indonesia is well known as the world's largest archipelago which representing more than 17,000 island from Sabang in northern Sumatra to Merauke in Irian Jaya. Indonesia is connected by sea with total area of 1.910.931.32 km² and total population of 248.818.100 and has 34 provinces (BPS, 2014). Besides the geographical conditions, Indonesia has around 300 ethnic groups which have different values and beliefs. Data from Center for Educational Assessment show that there are about 5.476 PKBM for both Package B and C programs across the country with a total of 383.850 students as presented in Table 2 (Puspendik, 2017).

Table 2: Number of PKBM and Students Taking National Assessment in PBT and CBT

| Level | PKBM | | | | | Students Taking National Assessment | | | | |
|--------------|--------------|--------------|------------|--------------|--------------|-------------------------------------|--------------|---------------|--------------|----------------|
| | PBT | % | CBT | % | TOTAL | PBT | % | CBT | % | TOTAL |
| Package B | 3,835 | 83.37 | 765 | 16.63 | 4,600 | 115,631 | 85.08 | 20,282 | 14.92 | 135,913 |
| Package C | 3,548 | 80.14 | 879 | 19.86 | 4,427 | 207,549 | 83.71 | 40,388 | 16.29 | 247,937 |
| Total | 4,567 | 83.40 | 909 | 16.60 | 5,476 | 323,180 | 84.19 | 60,670 | 15.81 | 383,850 |

Data on Table 2 show that out of the total number of PKBM in Indonesia (5.476), the number of PKBM implementing PBT is 4.567 with percentage of 83.40 percent and the number of PKBM implementing CBT is 909 with percentage of 21.37 percent. This indicates that most PKBM still implement PBT in national assessment in academic year 2017. The data also show that the number of students taking PBT is much higher than the number of students taking CBT in national assessment with percentage of 84.19 percent and 15.81 percent respectively.

The low number of PKBM implementing CBT could be due to the lack of facilities. In this context, BSNP (2017) has issued a regulation saying that for PKBM to organize CBT in national assessment, it must have at least 20 computer units and one server. However, if PKBM did not fulfill this requirement, BSNP allowed it to join either formal or non-formal education school units equipped with such facilities. Another opportunity is the policy related to non-formal education management authority. According to Law No. 23 Year 2014 about Local Governance, the management of non-formal education, including equity education is under the authority of District Education Offices for both Package B and C programs. This offers opportunities to have better coordination and arrangement in implementing CBT for non-formal education.

In addition, there is effective cooperation among stakeholders, such as government sectors especially state electricity company (PLN) which ensured that there is no electricity shortage during the implementation of CBT. PLN also provided generator as an anticipating action if the power supply encountered troubles. Policy made by Mayor or Governor in each region to apply CBT in national assessment was considered as another opportunity. In 2016, Surabaya city was the only city that carried out CBT in all schools. By 2017, all schools in the Province of DKI and Province of

DIY implemented CBT. Similarly, supports from non governmental sectors such as telecommunication providers was a great opportunity for implementing CBT in national assessment. Their support is ensuring that the internet access is sufficient enough during downloading the assessment items from the central server.

The characteristic of CBT application which is called as user-friendly was also seen as a great opportunity. For this reason, students who use mobile phones will have no difficulties in taking CBT during the national assessment. In addition, the CBT business process was found to be simple and easy because it was not conducted fully online, rather it was conducted in term of semi-online way. This means that first online conductance was done about three days before the assessment implementation to download question items from the central server to local server. At the time of CBT implementation, it was done offline because it used the local server. The second online conductance was when the proctors sent student's responses from the local server to the central server. Given this fact, there is no worry about the internet connection for CBT implementation.

In terms of national assessment time table, BSNP (2017) made a policy to conduct CBT for non-formal education on Saturday and Sunday. This policy differed from that of formal education where the national assessment is done during the weekdays. The main reason for this is to give more opportunities to learners in taking national assessment. Based on an evaluation done by BSNP (2016), the presence of national assessment takers from non-formal education was low because they did not get permission from their employers to leave the work place. Having this policy, it is most likely the idea of resource sharing for CBT national assessment in non-formal education can be successfully implemented.

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The above mentioned advantages of CBT supported the previous studies (Hosseini, Zainol Abidin, and Baghdarnia, 2014; Boeve et al., 2015; Piaw, 2012; and Retnawati, 2015). Hosseini et al. (2014), for example, found that among the advantages of CBT are cost-effective administration, ease of administration, more accuracy, immediacy of scoring and reporting, and flexible test scheduling and location. Similarly, Retnawati (2015) pointed that CBT offers the richness of the interface, for example, the use of graphics allows a dynamic presentation of the test content.

In addition to above mentioned opportunities, there were several effective practices found during the implementation of CBT for non-formal education. These practices were considered as improvement and event innovation in organizing national assessment for non-formal education in Indonesia and it might be adapted in other situation where the CBT is conducted for non-formal education.

Report by Puspendik (2017) showed that there was cooperation between the Ministry of Education and Culture (MoEC) and the Ministry of Religious Affairs, Ministry of Internal Affairs, Ministry of Communication and Information, Higher Education Institutions, Provincial and District Education Offices, Center for Education Quality Assurance (LPMP), State Electricity Company (PLN), internet network providers, school principals, teachers, and parents. Those involved in the implementation of CBT for non-formal education had the same ambitions to make CBT a success. Therefore, they dedicated their times, efforts, and thoughts in order to make CBT run smoothly as this year was the first time CBT conducted for non-formal education. A success story of CBT implementation this year will have a great impact on the implementation of CBT for non-formal education in future.

During the implementation of CBT for non-formal education, the central organizing committee under the Ministry

of Education and Culture also provided public services by establishing a helpdesk team. The main duties and tasks of this team were to provide assistance for any complains and difficulties occurred in the field during the implementation of CBT for non-formal education. The helpdesk team also created social media groups to coordinate and share informations on technical knowledge, problem solving, and policies related to CBT implementation for non-formal education. The use of social media, such as facebook, whatapps, twitter and so forth in disseminating information is an innovation that deserved appreciations.

Another innovation done by the helpdesk team under the Ministry of Education and Culture was the notion of giving tips to learners who wanted to take the CBT for the first time. The messages were clearly articulated in simple language as so it is easy for students of non-formal education to understand. Below were examples of the socialization materials in order to make students feel comfortable with CBT (Kemdikbud, 2017). Basically, this tips were meant to assist students during the implementation of CBT. For instance, it mentioned that students should stay calm and relaxed when they enter assessment room and whacted the computer on the table. They have start by reciting prayer to God and then to read carefully the instruction given on the computer screen. They were also advised to raise up their hands when they encounter technical problems as to proctors could help them.

The tips also mentioned about the importance of time management. Each subject is allocated with 120 minutes for 40 to 50 assessment items. In this context, it is advised that students to do the easiest questions first, instead of the most difficult ones. Therefore, time management is important for national assessment takers. Most importantly, students were advised to observe honesty during the test. This is because honesty is the best policy. If they were unable to observe honesty in the national

assessment, their personal integrity is questionable.

Considering the above mentioned opportunities and challenges as well as effective practices in implementing CBT for non-formal education, the following assessment takers' testimony from a test taker in Banjarmasin South Borneo, gives more evidence on the success story of CBT implementation for non-formal education.

"As a national assessment taker, I felt that the use of CBT in national assessment for non-formal education was more effective than PBT. It was very simple and user friendly. I have more time to check and recheck our answers. In case I did mistake and want to change the answer, I just move the cursor to the destined answer, without rubbing the answer as it is done in PBT".

Student's testimony as mentioned above clearly indicates that students enjoyed taking CBT in national assessment for non-formal education. This could be due to the fact that students were called as Y-Generation as Suryadi (2015) said that one of their characteristics is curiosity to explore new things, including new technology. Thus, students who are familiar with computer feel more comfortable taking CBT in national assessment.

3. CONCLUSIONS

The results of this study showed that the policy of CBT implementation in national assessment for non-formal education faced numerous challenges, including resistance from the students and stakeholders, technical problems, students' competences in computer skills, and public engagement. However, the policy was regarded as an innovation for improving the quality of non-formal education and assessment system. Therefore it needs improvement for further implementation for all non-formal

education institutions throughout the nation.

Despite the challenges found in this study, the findings of this study have several implications in improving CBT implementation for non-formal education in future. The resource sharing between formal and non-formal education units, integrated database of national assessment participants, and effective practices found in certain districts during the implementation of national assessment, should be taken into consideration in future. Most importantly, road map and milestones for improving the acceptability and credibility of national assessment for non-formal education should be clearly designed and well articulated.

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