The Washback Effect of National Exam's New Policy towards Mathematics Learning Process in Indonesia

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Abstract
Since the beginning of 2015, national exam in Indonesia was no longer used as graduation standard. This policy was made because of negative effects of this standardized test toward educational system in Indonesia. One of the effects is the teaching method used by teacher that rely on memorization and drill practice. The aim of this study is to see whether this new policy has an impact in teaching learning process in mathematics classroom. The samples of this study were 17 mathematics teachers from six different provinces in Indonesia. Before this policy issued, 12 teachers use conventional learning, while five teachers use unconventional learning methods such as problem solving, open ended problems, and contextual learning. The results of questionnaire reveal that from 12 teachers who use conventional method, only two teachers that change their teaching method after the new policy about national exam released. It means that 83% of teachers who use conventional learning in this study keep using the same method. Easy in the implementation and easy to understand by students are the main reasons of teachers decision to keep implementing this method. This finding shows that the changing of intended curriculum by government as decision maker is not followed by the changing of implemented curriculum-pedagogy- by teachers. Based on the result of this study, the recommendations are given to incorporate the vision and mission of government and teachers in order to reach the desired goal as well as for doing further research on this issue.

Keyword: national exam, policy change, teaching method, mathematics, Indonesia

Introduction

Standardized test have become a discourse in many countries including Indonesia until today. In U.S. for example, since founded in 2002, No Child Left Behind (NCLB) has led to the pros and cons among the U.S. public because of its 'one size fits all' concept. The support came from government with refer to the statement of President Bush (as cited in Guisbond & Neill, 2004): "Without yearly testing, we do not know who is falling behind and who needs help. Without yearly testing, too often we do not find failure until it is too late to fix". Whilst, cons attitudes towards this system mostly emerged from teachers, students, and parents. According to Behrent (2009), NCLB enforce teachers to focus instruction on test taking rather than learning. Consequently, material or subject content not covered by the test was ignored (Le Cordeur, 2014). Beside that many teachers in U.S. have lost freedom to teach students by their own ways. Their desire to inspire students and to support students in developing their talent and potential have inhibited by the pressure of NCLB on teachers (Behrent, 2009).

In Indonesia National exams (Ujian Nasional) as standardized test were implemented for 9^{th} grade (junior high school) and 12^{th} grade (senior high school) since 2003. In junior high school, there are four subjects tested, namely mathematics, Indonesian, English, and natural science. While in senior high school, there are six subjects tested consist of mathematics, Indonesian, English, physic, biology, and chemistry.

Domino Effect of National Exam in Indonesia

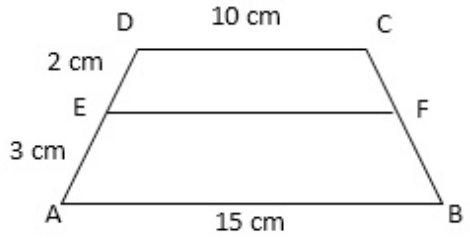
The pros and cons of national exams also happens in Indonesia. While it is still not certain to what extent national exams can measure students' comprehension in mathematics, the effects of this system in math learning process have been seen clearly. As a math teacher, I have experienced that national exams give negative effects for both teachers and students. I called the effects as "domino effect". Why domino effect? Because one effect influence the emersion of the next effect.

The first effect is the teaching method used by teacher. According to Ministry of National Education in Indonesia, the aims of mathematics teaching and learning are to help learners to gain mathematical abilities such as: (1) a comprehensive understanding of mathematical concepts; (2) mathematical reasoning (inductive and deductive); (3) an ability to solve the problem in variant context; (4) the ability to communicate the ideas; (5) good behaviour towards mathematics (Shadiq, Iryanti, Wahyudi, & Subanar, 2010). However, since national exams held in 2003, these noble purposes were forgotten. In order to obtain high scores in national exams, most of teachers in Indonesia tend to use rote learning rather than meaningful learning. Marpaung (as cited in Pujiadi, Kartono, & Asikin, 2015) said that mathematics learning in Indonesian school mostly use conventional learning in which the students are used to do activities such as memorizing the rules and formulas without accompanied by the development of other abilities such as problem solving and creative thinking. In line with Marpaung, some scholars from Indonesia also argued that:

> […] the national examinations have negatively affected curriculum implementation. In order for as many students as possible to pass the examinations, teachers tend to have the students memorize contents of the textbooks and teach them techniques about how to answer multiple choice questions by giving them drills. These students do not learn and understand mathematics and science, but merely memorize mathematical and scientific formulas for the examinations (Hendayana, Supriatna, & Imansyah, 2011, p.47)

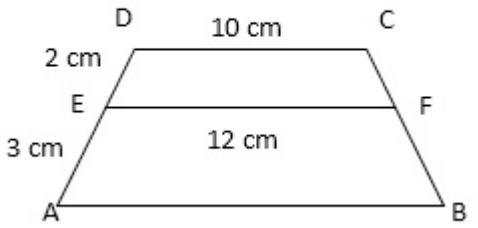
The next effect is the rampant use of quick mathematical formulas. The phenomena that was following "teaching to test" in Indonesia is the emersion of quick math formulas. The presence of this formulas was intended to make students easier in solving problems in national exams. The problems which normally take five minutes to be completed can be resolved in just one minute by using these tricks. Time constraints and a lot of materials that will be tested become the main reasons. Mostly, one quick math formula are only suitable for one type of problem. The effect is each of students will try to memorize as many as possible formulas without knowing the concept and once the test ends, they will forget all of the formulas and finally they got nothing, neither the knowledge nor the formulas. Below, I will provide example about the use of quick math formulas in Indonesia:

Problem 1



AB ‖ EF ‖ DC. Find the length of $\overline{EF}$.

Problem 2



AB ‖ EF ‖ DC. Find the length of $\overline{AB}$.

Problem 1 and problem 2 are resemblant, even to solve these problems we use the same concept about the similarity. However, problem 1 is more popular among students in Indonesia and most of them can solve it easily because they already memorized the quick formula of this problem. On the contrary, students find difficulties in solving problem 2 which is actually easier than problem 2. Therefore, the using of quick math formulas will never increase students' understanding in mathematical concept.

If “teaching to the test” and quick math formulas are the effects before the day of national exams, then the massive cheating action is the effect on the day of national exams. Every year, national media–newspaper, magazines, television–reported cheating action and exam paper leak that happened in several provinces. Surprisingly, this action was not only conducted by students, but also involved teachers, even school principals. In Deli Serdang, North Sumatra, 16 teachers and a principal at a high school were caught by police after correcting students’ answers on exam answer sheet in order to improve the grades. Meanwhile, in Pandeglang, Banten, police have arrested five teachers who leak national exams questions to junior high school students (The Jakarta Post, 2008).

The worst thing is, some principal forced teachers to make and to distribute the key answers to students. Some teachers accepted this command, while others kept maintaining the principle of honesty by rejecting this order and be willing to accept insult from theirs peers. The desire–to make all students pass the test and to be the best school– have made some principals violating moral values that should be owned by an educator. In order to see teachers’ perspective related to this issue, seven scholars from Indonesia conducted a research with theme “Voices from Local English Teachers”. Below are contradictory responses from two teachers about fraud in national exams that was taken from Mukminin, Haryanto, Makmur, Failasofah, Fajaryani, Thabran, & Suyadi (2013):

> […] For our students who just live in village with poor facilities in school and at home, it is like to kill them. What we can do to help them is to find the key answers for them although it is illegal. But if not our students will fail (Suryani, as quoted from Mukminin et al., 2013, p. 27)
>
> I am a Muslim and I hate cheating in our education. I do not provide my students with the answer keys although was told to do so. I am not afraid if I must stop being a teacher (Diana, as quoted from Mukminin et al., 2013, p.33).

The last effect in the series of “domino effect” is the phenomenon of mismatches. These incongruity was visible after the implementation of national exams. There are two strange facts and both of them related to score that was obtained by students in national exams. Every time the result of national exams published, we would find that there were so many students got high scores, even some of them got the perfect score. But, did these scores reflect their mathematical abilities? As a student who ever get the perfect score in national exams, I confidently say “NO”. “Teaching to the test” method succeeded in making students earns high marks, yet this method lead to a decline in mathematical creativity since there was no space to explore their own creativity in mathematics learning process (Brown, Frederiksen, as cited in Le Cordeur, 2014).

The second phenomenon is the discrepancy between students’ scores and their performance in the classroom. Subhan, an English teacher in Indonesia conveyed his complaint related to the accuracy of the scores:

> My question to you as a researcher, if one of your students gets a score of 8 or 9 in the exam for English subject, but you know his or her ability is not that good. Is that accurate? Or your students gets a score of 5, but she or he is actually a good student. So, many factors happen during the test and this is beyond our control as teachers (Subhan, as quoted from Mukminin et al., 2013, p. 26)

This case often happened in Indonesia in which the smartest student in classroom will get lower score compared with other students. There are several factors that influence this issue, such as the high pressure during the test, the rampant cheating action, and the using of multiple-choice questions. Ellerton and Clements (1997) who did research about the effectiveness of multiple-choice questions found surprising facts. There was about 28% mismatch between students' responses and students understanding. Students who lacked understanding of the concepts being tested gave correct answers, or students with partial or full understanding of the concepts gave incorrect answers.

New Policy about National Exam

Now the questions is 'how to stop this domino effect?' Stacking up a set of dominoes sequentially, then roll a marbles to the row of dominoes. What will happen next? Once we roll the marbles, then it will be hard to stop the movement of the dominoes. This is an analogy of standardized test in Indonesia. National exams is the marble that caused "domino effect" in educational system. Hence, in order to stop this domino effect, government as decision maker need to review and to evaluate national exam.

Indonesian government, in this case ministry of education have tried several times to review and evaluate it. Before 2011, national exam had been used solely to determine students' graduation. If students' score do not achieve the minimum standard of national exam, then they would fail and need to take an equivalency test, called as "Paket A and Paket B". However, there was a negative impression in the community in which looked down the alumnus of equality test. This situation have forced school in corporation with teachers striving to make all students passing the test, even by using the wrong way like what we have talked previously. Because of this negative effect, in 2011 government made a new policy in which national exam score only have 60% portion to determine students' graduation, while the remaining 40% was determined by school examination. However, after this new policy, there was no significant change in educational system in Indonesia. Teachers kept using the same method, the quick mathematical formulas still became the common sense in mathematics learning process and the cheating practice kept happens. Therefore, in the beginning of 2015, Indonesian Ministry of Education and Culture (2015) announced the surprising policy in which national exam is no longer used as graduation standard. Through this new policy, government expect that teacher can use variants of methods in learning process to increase students' abilities in other aspects such as creativity, problem solving and critical thinking.

Research Method

The aim of this mini research is to see the *washback effect* – the influence of a test on teaching process – of the national exams' new policy towards teaching methods used

by teachers in mathematics learning process. In this study I give questionnaire to 17 mathematics teachers in 6 different provinces in Indonesia. There are several questions in this questionnaire in which asked about teaching method used by the teachers before and after the national exams' new policy issued.

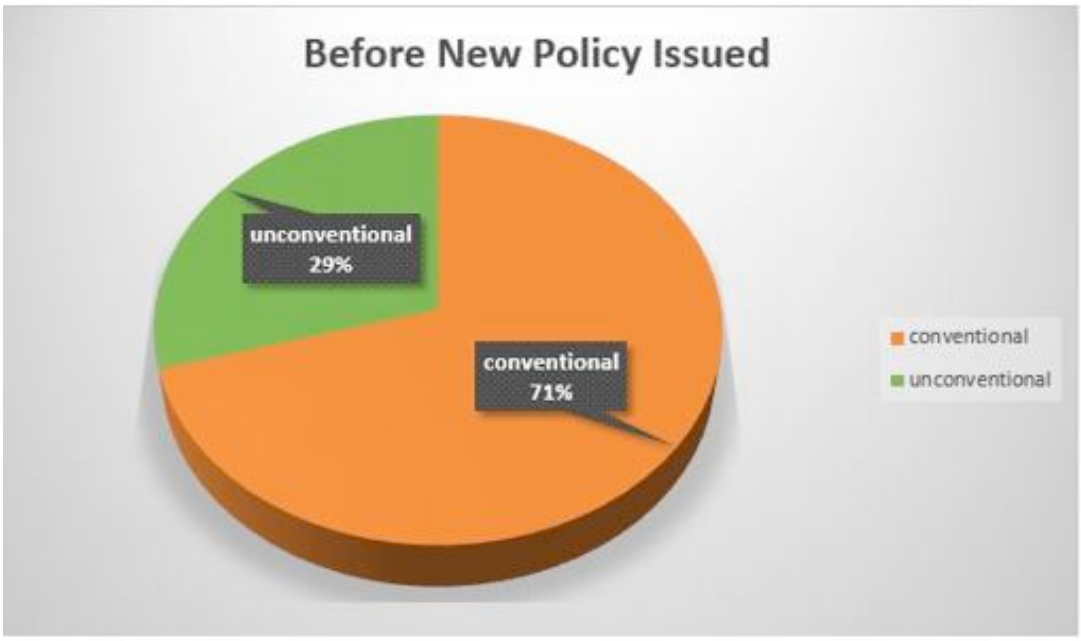


Figure 1

Result

The result of this study can be seen through the charts (figure 1 and figure 2) below. Before the new policy issued, 12 teachers used conventional teaching method that rely on memorisation and drill practice while five teachers have already used unconventional teaching method such as open ended problems, problem solving and contextual learning. After the new policy issued, from 12 teachers who used conventional teaching method, two teachers said that they changed their method in order to make students become more creative, more innovative, and better understand the concept. Meanwhile, the remaining 10 teachers confessed that they kept using conditional method even after new policy issued. These teachers said that there are several reasons why they keep using this method viz.1) it is easy in the implementation; 2) it is easy to understand by student; 3) time constraint; 4) lack of learning facilities in the schools. One of the teachers said that:

> "It is hard to implement unconventional method especially at school in remote area. Lack of facilities, time constraint and the low ability of students itself are the main reason of this problem. Some teachers have tried to implement unconventional method such as problem solving, however it only could be done occasionally."

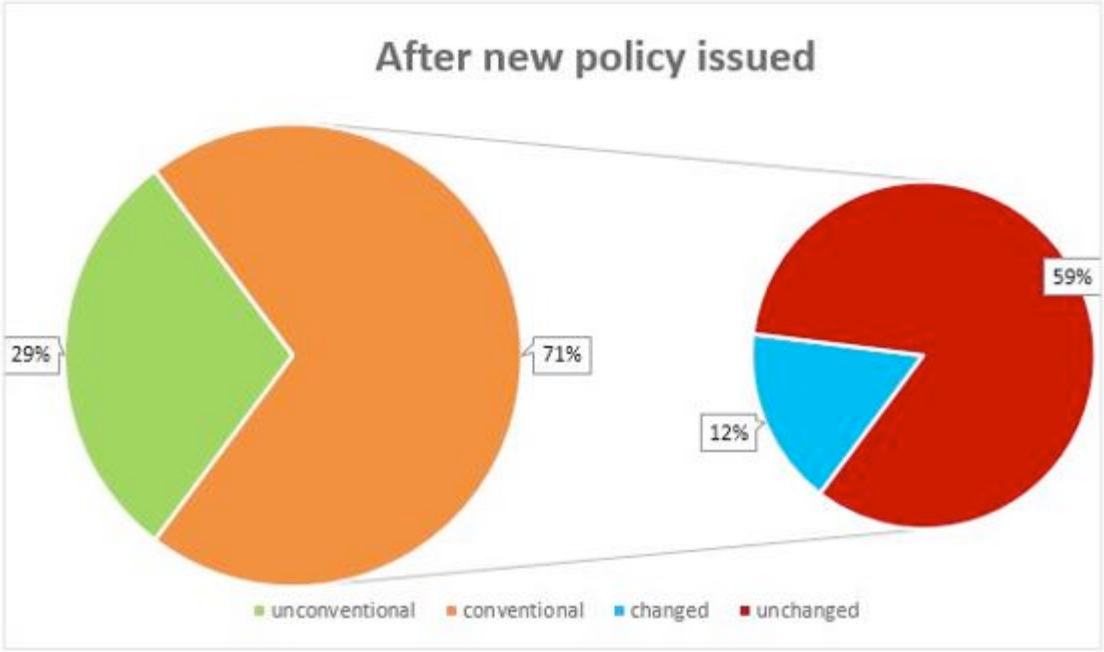


Figure 2

Conclusion and Recommendation

From this study it can be seen that the change of intended curriculum made by government are not followed by the change of implemented curriculum or pedagogy by teacher because teachers are reluctant to implement new method and keep thinking their old method is the best method that they could use in their classroom.

Therefore, I recommend several ways to make government and teachers can walk together in order to reach the better educational system in Indonesia. The first way is, teachers should be involved in shaping new policy. Why? Because teacher is the one who really know the condition in the classroom. Eisner (2000) in his study said that one of the lessons that could be learned from curriculum reform movement in US is the role of teacher in shaping the policy.

> Teachers are central to the improvement of schooling and need to have a substantial role to play in shaping the direction, content and form of the changes being proposed. (Eisner, 2000, p. 347)

When teachers are only passive recipient, then the case that we have talked before would happen every time government issue a new policy. If teachers are being involved, then they could give comments and share their experience during their time in classroom. For example, teachers could say that they don't have enough time to use unconventional method since there are too many materials in mathematics curriculum. Through this discussion, then government, teachers, and others educational stakeholders can try to find the solutions.

Second way is a good communication between teacher and government. When government announces new policy, they should give clear explanation about the policy. What is the goal of the policy, what is the expectation of government towards the policy, and the most important one is what teachers should do and how to do it. In many cases, there are so many policy from government that was misinterpreted by teachers because of the lack communication between government and teachers. One of the example is the implementation of character education in Indonesia. Most of teachers do not have any idea about how to incorporate character education into subject like mathematics and science because there is no adequate information about this policy. Consequently, the desired goal is never reached. Therefore, a good communication between government and teachers is one of the key to improve quality of education.

The last recommendation is professional development program for teachers that should be held regularly. Teachers are the key of successful education, hence we have to enhance their effectiveness by giving them a training intensively and provide them an opportunity to improve their skills (Le Courdeur, 2014). In Indonesia, most of teachers have to teach 24 hours per week, while the training about "good-teaching" rarely held. Therefore, by providing this program, teachers would know what method they could use to explain the certain mathematics concept and of course by using variants of method, it would enhance students' engagement in learning process.

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