

A Dilemma in Turkish Examination System: Open-Ended or Multiple-Choice?⁷

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1. Introduction

Ministry of National Education (MoNE) in Turkey, expressed the transition to Kazakh Examination System (Haberturk; 2013; Sabah, 2013; TEDMEM, 2013; TRTNews, 2013; Vatan, 2013) in evaluating student success in Turkish schools. The declaration from MoNE in Turkey thematized that “Open-ended question formats would be preferred radically instead of multiple-choice formats since they intend to measure student achievement better” (Tartanoglu, 2013). At the beginning of these discussions, the focus was on the large-scale assessments such as Transition from Primary to Secondary Education Exam (MEB, 2013). The very same discussions has been speculated in the education community for four years (ABIDE, 2015; OSYM, 2015) and recently Measurement, Selection and Placement Center (OSYM) announced to try this transition process for the first time in Undergraduate Placement Examination in 2017 (OSYM, 2017). However, what kind of results using open-ended question formats insofar nation-wide examinations can pose has been yet beyond a scientific pursuit.

Not only in Turkey but in many other countries the very same concerns exist to study knowledge construction and individuals' interaction with the question types (Berberoglu, 2009; Birenbaum & Tatsuoka, 1987; Rauch & Hartick, 2010; Stankous, 2016). While educational researchers professionally responsible for the search of truth, politicians, on the other side, should feel liable in making scientific results effective for public goods. Educational researchers clarify that political decisions without a scientific background will have been interrogated and, eventually, refuted. Hence, there should be a congruity between utilizing scientific truth and governing political power. There are many examples that decision makers have a tendency to use and cite scientific results to commercialize their popularity in the public eye even without comprehending the meaning of the study itself. Nevertheless, the real dilemma on today's educational research, especially in Turkey, is about research significance. That is to say, whether conducting a research that base its roots on overnight political declarations--about ameliorating educational system-- or conducting a research that becomes a base for accurate political decisions.

Based on aforementioned, similar to many studies that take their departure point from overnight decisions, this study concentrates one of the contemporary debates about the transition to Kazakh system in measuring student success through nation-wide exams at middle school level. More specifically, this research intends to underline some scientific backgrounds before any transitional process occurs. It is conducted to resolve the conflict in Turkey about whether examination system by employing open-ended question format must definitely be used in large-scale assessments such as Transition from Primary to Secondary Education Exam (MEB, 2013) by disregarding multiple-choice exams (Berberoglu & Is-Guzel, 2013; Ozuru et. al., 2013). For this purpose, the main aim of this study is to explore the comparative effects of open-ended and multiple-choice exams with regard to metacognitive and affective dimensions according to new large-scale examination system in

⁷ This paper was revised after being presented at XII. European Conference of Social Science Research organized by the International Association of Social Science Research, Catania, Sicily, Italy, January 25-28, 2017. The paper was prepared on the basis of master thesis in Graduate School of Social Sciences in Middle East Technical University, Ankara, Turkey, 2014.

Turkey. Specifically pertinent to this study is to show differential effects of question formats (Bridgeman, 1992) especially in mathematics assessment to government officials before any actual nation-wide implementation. The main research question of this study is “*Can open-ended questions be a solution to current problems in terms of the transition from middle to high school in Turkish examination system?*” The study revealed what people think about usability and feasibility of this new assessment movement and how the replacement of MC with OE is perceived from different perspectives. Also, it investigated the differential effect of MC and OE on students' metacognitive and affective characteristics in terms of worry, effort, self-checking, and cognitive strategy (Efklides, 2011; O’Neil & Brown, 1998).

2. Method

In this study, phenomenological approach of qualitative research design was followed (Patton, 2002). This design allowed the researcher to comprehend the common experiences of the participants including eight-grade middle school students, branch teachers from middle schools and several academicians in a profound way.

Participants

The study was conducted with public middle schools and a private school in Turkey. Totally 10 8th grade middle school students, 16 branch teachers and 6 academicians were included. The participants were purposefully selected (Fraenkel, Wallen & Hyun, 2014). In line with this, the 8th graders were distributed with regard to high, moderate and low achievement in mathematics. They are the possible candidates of transition to high school in that academic year. The academicians were expert in the department of educational sciences-specifically, curriculum and instruction, and measurement and evaluation from the promise universities in Turkey. Also some of them were from the departments of English language, science and mathematics education. All participants had experienced in both multiple choice and open-ended question formats. Teachers’ experiences with students were 2 to 23 years from 5th to 8th grade in several middle schools.

Data Sources

The data sources used in this study was semi-structured interview forms developed by the researcher. Semi-structured interviews allow for systematic analysis of the data collected (Yildirim & Simsek, 2016). The interview form prepared for middle school students, teachers and academicians had 20 questions and consisted of two sections: 1) questions on personal information, and 2) questions regarding experiences on open-ended and multiple-choice question formats addressing each dimensions of metacognition and affect. The piloting of the interview forms was checked by experts of several fields such as measurement and evaluation in MoNE, curriculum and instructional program, and Turkish language and literature. All interviews were completed in Turkish and later translated into English to prepare for data analysis. Necessary revisions to the interview questions were made following that procedure which resulted in the final interview forms. Sample interview questions can be found in Appendix A.

Data Analysis

The qualitative data was analyzed with content analysis (Strauss & Corbin, 2008). After the transcription of data verbatim, the content analysis was applied with four stages: 1) coding of the data, 2) identification of the themes, 3) arrangement of the codes and the themes, and 4)

description and interpretation of the findings. After all transcriptions summarized and codes were determined, the codes from key actors (informants) were reviewed together and common structures between them were found. Data was systematized by the themes, for instance, Theme 1: Cognitive Strategy, Theme 2: Self-Checking, Theme 3: Worry, Theme 4: Effort. Some details on these themes and codes are provided in Table 1.

Table 1. Themes and Categories in the Codebook

Theme 1. Cognitive Strategy	Theme 3. Worry
1.a. Solution Strategy Preferences	3.a. Type of feeling
1.b. Cognitive strategies employed	3.b. Feeling of disappointment and regret
1.c. Rewording skill to activate cognitive strategy	3.c. Feeling of requirement to study more
1.d. Spending time to understand	3.d. Happiness due to question format
1.e. Students' thinking on meaning of problem	3.e. Concern about what if done
Theme 2. Self-Checking	3.f. Feeling of confidence
2.a. Checking works	3.g. Feeling of comfort
2.b. Going over choices	Theme 4. Effort
2.c. Judging correctness of solution	4.a. Amount of work
2.d. Asking how well doing	4.b. Keep working
2.e. Correcting errors	4.c. Concentration
2.f. Asking questions to stay on track	4.d. Students' reflection of total effort
	4.e. Not giving up

Trustworthiness

Trustworthiness of the study was ensured through certain steps (Patton, 2002). To begin with, the interview form was evaluated and corrected by a language and evaluation expert. The codebooks generated by the researcher went through many revisions to guarantee reliability. The final version the codebook included agreed upon themes, codes, definitions and example quotations. In the qualitative paradigm, the researcher avoided to work deductively from previously supported assumptions, to have inability data coding technique, lack of knowledge about process and strategy, to be exposed to more instructional process instead of following what the soul of the data says (Groenewald, 2004). More than one researcher implemented data analysis part, and they performed the pre-coding, coding and categorizing in similar time interval but in different places without seeing their work. Credibility, transferability, dependability and confirmability are followed by certain steps. In terms of triangulation, data were not gathered by various methods; only interview, informal conversation was utilized. The interviews and focus group sessions were recorded and transcriptions were sent to participants to check accuracy.

3. Findings

The data revealed five themes: 1) Cognitive Strategy, 2) Self-checking, 3) Worry, and 4) Effort. Cognitive strategy as a straightforward cognitive goal is aimed to improve one's own knowledge to make cognitive progress while self-checking implies self-monitoring one's performance when engaging in a task. These skills were categorized under the *metacognition*. On the other side, worry remarks a chain of thoughts and images, negatively affect-laden and relatively uncontrollable while effort implies the willingness to keep trying and the mental strength to persist to complete the task. These skills were categorized under the *affect*, which is a physical reaction of students to testing situation (Lufi, Okasha & Cohen, 2004). Within the scope of this study, these dimensions were selected as important aspects (O'Neil & Brown, 1998) and they were significant for the development of individual's capacity to think

about how they learn through the process.

The primary purpose of this study was to generate deeper understanding on experiences of the students, the teachers and the academicians about the dilemma whether OE question formats can be a solution to current problems in terms of the transition from middle to high school in Turkish examination system. The participants' experiences were examined over the differential effect of MC and OE on students' metacognitive and affective characteristics.

Under *cognitive strategy* sub-dimension, the pre-coded categories found to be a) solution strategy preferences of students, b) the cognitive strategies employed, c) being able to reword to activate cognitive strategy, d) spending time to understand and e) students' thinking on meaning of problems. Majority of the students solve the questions by the way teachers taught. Half of the students perceived their teachers as knowledge source and a sole authority in class, and therefore, accept teachers' solution strategies rather than developing and using their own creative solution strategies. However, this preference decreases during solution of OE question formats. Secondly, the students solve problems including all sorts of reasoning, planning, arithmetic etc. As problem solving situation in large-scale examinations, the students have to use cognitive strategies to solve the question format regardless of MC or OE. In addition, to be able to reword the question roots after being given MC or OE questions is the indicator of using cognitive strategy skills actively. The common experiences showed us that one third of the eight graders reworded the question root of MC or explain the meaning in their minds before the solution whereas for OE, two third of the students' responses indicated that they reword problem root of OE. Besides, most of the participants experienced that OE questions require much time during the solution process and the tendency and the frequency of their experiences were higher about OE than MC in terms of generating rereading skills. Although very few students think about it as Student B,

the reason of why he does not need to reread MC as No, as I said, if you understand at first reading, it is due to reading habit. If you do not have a reading habit, it is difficult to comprehend the question in mind. At least, you need to read once or twice. Yet reading habit helps a lot in such questions. You read faster, understand better. You should first trust yourself, it does not matter whether it is open ended or multiple-choice questions. You can understand what you read.

One of the exemplar statements from a student for the case [solution strategy preferences] recorded is related with grading concern:

...I prefer the way my teacher prefers in answering open-ended questions because our teacher says that she will assign grades if we perform congruent with her/his problem solving path/ways. Otherwise, if I find a new or alternative path, s/he will not know whether the path is correct and same with his/hers...

An academician who is from the department of measurement and evaluation highlighted [on cognitive strategies employed] as

...In open-ended exams, children can really express what they think. In others, they select from what they are presented. However, in open-ended exams, they can transfer what they really know and think. The question asks what it is aimed to measure as knowledge, thoughts, and emotions and/or other. Children have more opportunity to use their creativity and they have more opportunity to create their own paths for solutions... students who can create their own paths, comprehend the paths and create

another situation and transfer their knowledge [metacognition] are more successful and present their success in exams. Therefore, open-ended exams are more promising.

Under *self-checking* sub-dimension, the pre-coded categories found to be a) checking works, b) going over choices, c) judging correctness of solution, d) asking how well doing, e) correcting errors, f) asking questions to stay on track. Most of the students, except two fifths, stated always the need of checking while solving OE formats. However, the participants' common experience indicated it is a common habit to go over the solution answer regardless of question formats. In terms of judging correctness, the common perception was toward OE question formats. In addition, the participants found a common ground about the students who may tend to ask themselves how they are doing during the solution process of an OE. Similarly, nearly most of them informed the learners may try to correct errors in OE more than MC that reflects the students can be aware of their mistakes. Finally, most of the participants, more than half, may open to activate questioning themselves to stay on track in the solution process of OE. For instance, Student J who always checks MC expressed "During solution, I do. Then I check the question again. Then I pass to the other questions. I progress like this." And the one who always needs to check the solution of OE said

Yes, particularly in written exams, the open ended-questions are few so that they are longer. I mean they more complicated, they require more focus and we undergo self-evaluation through these questions. We should decide and define what to do with the question. However, this period is shorter in multiple-choice questions. (Student C)

Teacher G who presented an opinion on whether the students are able to go over choices when they are solving MC mentioned

In multiple choices, isn't it? Can they see their mistakes? I think they cannot since multiple choices condition them. As I said, I am a classic teacher. I think multiple choice questions should not be in school life. I think they do not measure anything. Everything is ready for the students and they think that they should find the best alternative according to them...

Academician E explained her observations on the fact that the students have tendency toward asking questions to stay on track while solving MC by saying

They [the students] receive an education that provides time management skills and more true answers in short time, closer to SBS until that time. Not a motivation, but they have such behavior. Therefore, they can have a tendency to progress by controlling their answers. They can progress step by step controlling, not going back after the exam is over.

Under *worry* sub-dimension, the pre-coded categories found to be a) types of feeling created, b) feeling of disappointment and regret, c) feeling of requirement to study more, d) happiness caused by question format, e) concern about what if done, f) feeling of confidence, g) feeling of comfort. All of the participants indicated being exposed to large-scale assessments might initiate negative feelings. So, they are agreed on that. Although half of the academicians indicated the students may have feeling of disappointment during solution process of OE, the experiences of teachers showed us the opposite. In addition, feeling of the said "I wish I could study more" is one of the indicator of eliciting worry and the experiences of all of the participants have not record a great difference between MC and OE.

Teacher H evaluated this feeling with a different dimension as "When the exam

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approaches, their anxiety increases. They are anxious during the exam as well since there is pressure to be successful. The families expect success from their children. It is important for them. The family has a huge influence.”

An academician who shared how students feel in solution to each question format said “They are happier since production is difficult [for OE format]. Besides, they cannot remember in open ended questions, but multiple choice questions can help them remember.” (Academician F).

Under *effort* sub-dimension, the pre-coded categories found to be a) amount of work, b) keep working, c) concentration, d) students reflection of total effort, and e) not giving up.

A huge amount of the participants experienced whether the students need work hard is the indicator of effortful activity on the solution process of the question formats. So, the findings indicated OE requires more amount of work than MC. Despite similarity to few students' views on OE only one teacher said they did not keep working for OE by losing their effort. The Teacher F stated “To practice but not as much as with multiple choice questions. There, speed is important. However, here exercises on comprehension need to be done rather than practice...” Most of the participants agreed on the fact that solution process of OE formats necessitates keep working. On the contrary, common experiences indicated the eight graders need to concentrate as hard as they can while solving a MC. Finally, the common views of the participant's experiences highlighted OE might be more probable question formats to reflect the students' total effort on solution strategy. Even if length of an OE may force them get lost in the exam, they should not give up by keeping their effort strong. They may not give up easily on MC. However, some participants experienced counter arguments as such;

Student B who experienced MC as an easy format said,

Multiple-choice questions are easier comparing to open-ended questions. People's perspective is that way and so is mine. In my opinion, multiple-choice questions are easier and require less effort than open-ended questions. Because one thinks a lot for open-ended questions. For instance, if you write an essay or paragraph you definitely need wide knowledge of vocabulary on the topic. However, you would not face the same problem with multiple-choice questions.

Majority of teachers who thought there is no much necessity of performance for MC thanks to familiarity of it whereas only two of them thought OE did not require harder work to perform well. For instance, Teacher A expressed and Academician E provided counter arguments;

Solving a multiple-choice test would be sufficient for someone who repeats his courses and solves the questions in his textbook. It shouldn't be difficult for someone who knows the topic and solves 10-15 questions to solve the other tests. I don't think that extremes practice, such as solving 300-500 questions is not necessary for a child at primary school.

...whatever the experience of the student shows. ‘Okay, I may not have solved this one but I will evaluate the others better’. There is the motivation of ‘this may come to my mind when solving the others’... There are announcements of tests saying ‘Pass the questions you couldn't do, spend at least some minutes, pass and turn back to the question, don't demotivate yourself.’ If the student has passed such a training and has practiced this then he will continue, and turn back because he has the motivation that the answer may come to his mind. Therefore, he may approach the questions differently. (Academician E)

4. Conclusion

This study aimed to explore the comparative effects of open-ended and multiple-choice exams with regard to metacognitive and affective dimensions. The main concentration of conducting this study was a declaration, which came from the Minister of National Education of Turkey. It was declared that instead of using multiple-choice exams to measure student success and use this nation-wide exam result for transition purposes from middle school to high schools, open-ended questions would be preferred since they intend to measure student achievement better. However, results of this study indicated that both examination types have positive and negative sides with regard to cognitive and affective dimensions. Therefore, before deciding about nation-wide changes, it is essential for political leaders to back up their decisions with scientific findings.

Having said that, this phenomenological study underlines the fact that both question types trigger different sorts of cognitive strategy. For instance, some students prefer multiple-choice more because self-checking through item stem and alternatives is easier while some prefer open-ended since it provides chances to look at the question from a broader perspectives. In addition, some students and teachers indicated that multiple-choice provides content validity benefits while open-ended is limited at this part. Moreover, findings showed that effort spent in solving questions differs among high, middle, and low achievers. Interestingly, there is no consensus among the level of achievers in relation to spending an effort on different types of questions. For instance, some high achievers indicated that open-ended requires more effort while others mentioned as less effortful. In addition, opinions differentiated in relation to anxiety and worry. While both exam types create less anxiety on high achievers, middle and low achievers demonstrate differences in anxiety levels. Based on the results of this study, changing the question type is not a spontaneous heal in improving student placement via test results (Heck & Stout, 1998; Johnson, Sieveking, & Clanton, 1974; Lawrenz, Huffman, & Welch, 2000; O'Neil & Abedi, 1992; Ozuru, Briner, Kurby, & McNamara, 2013).

As conclusion, the study asserted that the participants' experiences showed a positive trend toward open-ended question formats in large-scale assessments in Turkish examination system. Since the students can use metacognitive skills while solving open-ended questions rather than multiple-choice. Somehow, it is expected that the students' worrisome feelings are not toward the question formats regardless of open-ended or multiple-choice but toward the examination system competed by the millions in every year.

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