OPEN ENDED QUESTIONS AS AN ALTERNATIVE TO MULTIPLE CHOICE:
DILEMMA IN TURKISH EXAMINATION SYSTEM

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ABSTRACT

Open Ended Questions As an Alternative to Multiple Choice:
Dilemma in Turkish Examination System

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This study aims to explore differential effects of multiple choice (MC) and open-ended (OE) question formats in terms of metacognitive and affective dimensions. Each dimension (e.g. cognitive strategy, self-checking, worry and effort) was explained to be perceived from common experiences of eighth grade students (N=10), branch teachers (N=16) and academicians (N=6). Phenomenological research was conducted to collect common experiences of participants through cognitive interview.

Purposeful sampling method was used to select the participants of the study. According to sampling method, the interviewees from public schools in Istanbul and a private school in Ankara were composed of eighth grade students (N=10), teachers from basic branches of secondary school (N=16) and academicians (N=6) who have background experience with MC and OE. A group of teachers (N=6) in the private

school also participated in focus group interview to look into the dimensions of the study altogether.

The data collection method was cognitive interview. Interview questions were reviewed by three experts and instruments were developed throughout the study for validity and reliability intentions. Qualitative data analysis was used to explicate collected data. After the collected data had been coded, expressions including parallel patterns were combined into twenty-three categories and four themes emerged.

The results of data analysis indicated that OE allows eighth graders to use their cognitive strategy and self-checking metacognitive skills more often than MC. It also indicated that more effort is needed for OE than MC. However, the results also indicated that MC created much more worry than OE.

ÖZ

Çoktan Seçmeli Sorulara Alternatif Olarak Açık Uçlu Sorular: Türk Eğitim Sistemindeki İkilem

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Bu çalışma, açık uçlu ve çoktan seçmeli soruların ayrımsal etkisini üst biliş ve duyuşsal boyutlardan incelemeyi amaçlamaktadır. Çalışma, üst biliş olgusunun bilişsel strateji ve öz kontrol olarak adlandırılan iki alt boyutu ve duygu olgusunun efor ve endişe olarak adlandırılan iki alt boyu üzerinden; 8. sınıf öğrencileri (N=10), branş öğretmenleri (N=16) ve akademisyenlerin (N=6) ortak deneyimlerinden yararlanılarak gerçekleştirilmiştir. Olgu bilim yöntemi kullanılan bu araştırmada katılımcıların ortak görüşlerinden çıkarım yapabilmek için bilişsel görüşmeler kullanılmıştır. Istanbul ve Ankara'dan devlet ve özel ortaokullarından, çoktan seçmeli ve açık uçlu sorular hakkında önceden deneyim sahibi olan 8. sınıf öğrencileri, temel branş öğretmenleri ve akademisyenlerden oluşan katılımcılar amaçlı örnekleme yöntemine göre seçilmiştir. Katılımcılar içerisinden seçilen bir

grup öğretmen (*N=6*) ile tek seferde tüm alt boyutları tartışabilmek için odak grup görüşmesi gerçekleştirilmiştir.

Veri toplama yöntemi olarak bilişsel görüşmelerde kullanılacak olan görüşme soruları önceden üç uzman tarafından kontrol edilmiş, pilot çalışma yapılmış ve ölçek katılımcılardan gelen dönütler ile geçerlik ve güvenirliği sağlamak için çalışma boyunca geliştirilmiştir. Toplanan verileri yorumlayabilmek için veriler kodlandıktan sonra örüntü içeren paralel ifadeler yirmi üç kategori altında birleştirilerek dört ana tema altında sıralanmıştır. Ardından nitel veri analizi nicelleştirilerek ifadeler betimsel ve yordamsal olarak sunulmuştur. Verilerden çıkarılan sonuca göre açık uçlu sorular, 8. sınıf öğrencilerinin bilişsel strateji ve öz kontrol becerilerini daha fazla çalıştırdığı ortaya çıkmıştır. Ayrıca öğrenciler açık uçlu soru çözerken daha fazla efor harcamaktadır. Ancak çoktan seçmeli soruların açık uçlu soru formatına göre daha fazla endişe yarattığı sonucu çıkarılmıştır.

Anahtar Kelimeler: Çoktan Seçmeli ve Açık Uçlu Sorular; Bilişsel Strateji; Öz Kontrol; Endişe; Efor

To the readers who will appreciate the value of

the expression:

"who understood?"

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LIST OF ABBREVIATIONS

ACT: American College Testing

ALES: Academic Personnel and Graduate Studies Exams

FATIH: Movement of Enhancing Opportunities and Improving Technology

GMAT: Graduate Management Admission Test

GRE: Graduate Record Examinations

KPDS: Public Personnel Language System

KPSS: Public Personnel Selection System

MASRL: Metacognitive and Affective Model of Self Regulated Learning

MC: Multiple Choice

ME: Metacognitive Experiences

MoNE: Ministry of National Education

OE: Open Ended

OECD: Organization for Economics Cooperation and Development

OKS: High School Entrance Examination

OSYM: Measurement, Selection and Placement Center

PISA: Programme for International Student Assessment

SAT: Scholastic Assessment Test

SBS: Level Measurement Exams

TAB: Test Research Bureau

TIMSS: Third International Math and Science Survey

TEOG: Transition from Primary to Secondary Education Test

TUSIAD: Turkish Industry and Business Association

UDS: Interuniversity Board Foreign Language Exam

ÜSYM: University Selection Placement Center

CHAPTER I

INTRODUCTION

Measuring student success in education systems provides significant inputs for the continuity and effectivity in educational process. Measurement and evaluation are processes that supplement feedback to instructional applications and through this process, instructional quality can be evaluated to determine whether the intended outcomes are achieved. If all inputs in education process could be converted into learning output in a meaningful sense, it could be determined whether the process was effective. Today's one of the most important problems that is to be dealt promptly in teaching and learning process is the proper measurement of the so-called learning output to provide feedback for the educational process (Berberoğlu & İş-Güzel, 2013). Therefore, there is a wide range of ongoing research on measurement and evaluation in many countries. It has also been discussed that the learning process can be more effective when developing measurement-evaluation related projects about justifying student success and investigating the investments in the learning process to see whether qualified learning outputs occur (Gömleksiz & Türel, 2005; Uşun, 2004; Yıldız & Uyanık, 2004). As in other countries, there have been many research findings in Turkey for a long time, but the rapid and recent changes in measurement and evaluation of the process-into-product have drawn attention. There are many questions that remain to be answered about whether certain central examination, which is sudden and prepared without any basic construction, measure success effectively or the implementation of more local and long term measurement processes are more effective in measuring success and learning outputs. Nevertheless, in countries where education is centrally structured, it is a common thought that the centralized institutions are responsible for designing an effective measurement and evaluation process, maintaining the process, and evaluating it accordingly.

When the historical background of Turkish examination system is considered, it is clearly seen that there are many rapid overnight changes of measurement and evaluation. The examinations and regulations have been altered from the start of primary education to the university entrance and even from master's programs' entrance to academic promotions in a twenty-year period. For instance, a short while ago, with the new "Kazak Model" that has been propounded by Ministry of National Education (MoNE), there appeared a new examination focusing on the process rather than the result. It emphasizes a thorough measurement and evaluation process rather than the part-by-part grading results, and this model especially draws the attention of teachers, students, and the public. It has been declared that even one or more of the exams implemented by the teachers in schools will be maintained by the ministry. With the new decision, the examinations that are mainly taken at the end of the academic year will be taken throughout the semester so that the responsibility of the measurement and evaluation will be taken partly from teachers. Now, the question that arises is whether alternative exams are alternatives to the old testing. There is a point to remember that no examination can be a sole determinant for a better and more accurate result than the other. Therefore, instead of implementation efforts for uniform examination in learning process, which ends with teaching-learning process, integration with different cover and content examinations could be considered as more effective.

As if one form is better than the other, rapid changes have been made on the questioning format of the examination system in Turkey throughout the history. However, the main problem is not only dependent on question format, but also on multi-dimensional aspects. For example, our children allocate most of their time and energy to solve multiple choice questions. However, expected abilities, skills, and attitudes other than problem-solving skills that educational systems are responsible to provide and measure are somehow neglected or overlooked. Almost all types of questioning formats have constraints; MC causes development of students who are unproductive and tend to do only select things. On the other hand, OE formats seem as difficult and non-objective (Berberoğlu & İş-Güzel, 2013). In this scope, rather

than dealing with an unexpected evolution of question formats, the extent to which conditions and purposes of question formats are beneficial and appropriate for certain goals or objectives should be taken into consideration accordingly.

During solution process of MC or OE question format, the examinees need to use some metacognitive strategies during process in order to reach the answer. What they feel is also another aspect that should be considered for betterment of solution process. Therefore, cognitive strategy and self-checking aspects of metacognition, and worry and effort aspects of affective dimension can be used by the examinees. However, amount of these skills used by the students can be determined in the solution process of MC and OE. Cognitive strategy implies the structure of learning when the intended strategy cannot be completed through steps. For cognitive strategy, the students' construction of reasoning and planning can be considered. For self-checking, their self-regulated behaviour differences while working on MC and OE can be understood. Also, the students' worry which implies cognitive concern or anxiety related to performance of failure and effort which implies working hard on task and not giving up for solving the item format should be comprehended with regard to MC and OE which are superior from each other over different constructs.

The aim of this study is to shed light on similarities and differences between the two exam types with a different perspective of content and process. As stated by the aforementioned discussion, this study targets to explore differential effects of open-ended (OE) and multiple choice (MC) questions from metacognition and affect perspectives. In order to achieve these aims, phenomenological study of qualitative research is conducted and there is one major research question leading this study:

"What are the perceptions about MC and OE related to metacognition and affect for middle school students, according to students', teachers' and academicians' point of views?"

The following sub perspectives guide the main research question,

(a)   The usage of MC and OE questions,

(b)   The strength and weaknesses of MC and OE questions,

(c)   The classification of *metacognition* by self-checking and cognitive strategy, and of *affect* by effort and worry,

(d)   The appropriateness of MC and OE in large scale assessments from the viewpoint of middle school students, teachers, and academicians.

1.1.   Background of the Study

O'Neil and Brown (1998) asserted that, educators are in search for alternative assessment techniques to measure students' achievements since traditional measures are not compatible with measuring actual achievement. They emphasized that in most educational establishments, testing formats, such as MC, are a common everyday routine and do not enable students to engage in complex and higher thinking situations. For instance, during mathematical reasoning the learners may have a tendency to use trial and error or guessing approach for MC items. Hence, quality and depth of their reasoning ability as well as nature of their responses cannot be evaluated accurately. Discovering how learners engage in learning as well as their responses are important not only for measuring student success and achievement but it also provides a great deal of feedback for educational systems and for their stakeholders. Similar to O'Neil and Brown's thoughts, Berberoğlu (2006) also declared that using only one type of questioning format limits measurement attempt to gather one way characteristic of learning outcomes since it is a common fact that every measurement scale has both pros and cons. That being said, MC and essay examinations or OE techniques measure somewhat separable constructs (Bridgeman & Morgan, 1996; Özuru, Best, Bell, Witherspoon & McNamara, 2007). Each measurement technique requires different applications of cognitive strategies and learners, however, develop both cognitive and exam taking strategies congruent with the type of exam. For instance, the issue of popular usage of MC items in large scale tests has triggered success by chance and inability to check higher order cognitive

skills (Tekin, 2004) provoked tendency to apply different item types (Gültekin & Çıkrıkçı-Demirtaşlı, 2012).

Several educational researchers and practitioners (Dwyer & Ramsey, 1995, as cited in Nettles & Nettles, 2012; Harmon, 1991, as cited in Sackett, Schmitt, Ellingson & Kabin, 2001; Lee, 1999; Neil, 1995) indicated that in any educational system, educators need to consider their approaches not to limit their practices to only multiple-choice testing to assess students' learning. Yet, Smith (1991) asserted that in his early empirical study, "high-stake testing" promotes multiple choice oriented teaching in the classroom. The results from various national and international large scale assessments of school children showed that there was a high tendency to assess achievement through the use of MC question types. When we examine Turkey's educational assessment system, it can be seen that measurement and evaluation are totally based on multiple-choice testing at various levels of schooling and life span such as OKS, SBS, TEOG, University Entrance, ALES, KPSS, KPDS, UDS, and so forth. Interestingly, other countries and organizations are also seemed to be in favor of MC exams such as the SAT, ACT, GRE, GMAT, PISA, TIMSS, and many others. Although most students demonstrate acceptable success in MC type exams, the performance of students on large-scale assessments that are not standardized is low. For instance, the results of PISA examinations clearly showed that Turkish student performances, especially in mathematics and science, were lower than those of many other participating countries (OECD, 2008; PISA, 2009, 2012). Moreover, according to PISA 2012 results, Turkey was ranked last in the mathematics and science sections and ranked second to last place in the reading sections. 65 countries, some of which were China, Japan, South Korea, Singapore, Sweden, Poland, and Estonia…etc., participated in the PISA 2012. Turkey was ranked 44 with 448 points in mathematics, 43 with 463 points in science, and 41 with 475 points in reading. Several studies (Berberoğlu & Kalender, 2005; Eraslan, 2009; TUSIAD, 2013) examined possible underlying reasons of such failure. Before moving on to these possible reasons, the structure of the PISA exam will be introduced briefly.

PISA assesses students' performance and abilities mainly in three areas: mathematics, science, and reading. These content areas include questions that specifically target students' abilities to use their knowledge consciously. For instance, according to TUSIAD reports on PISA 2012 results, in the mathematics content area, some of the questions require the ability to utilize procedural knowledge, some require the ability to connect different mathematical topics and strategies to engage in the problem solving process, and the last type of questions require the ability to interpret and draw conclusions based on presenting mathematical data and situations. In general, in all content areas of PISA, nearly half of the questions are either short answer or multiple-choice questions. The other half is composed of open-ended questions (PISA, 2012; TUSIAD, 2013). In this respect, PISA can be used to determine students' desire toward learning, performances and motivation. So, PISA examination includes probable questions required to use cognitive strategy. Also it can be more efficient for the students to activate their self-checking strategy. However Turkish students who tested with PISA have shown low achievement. It may possible to comment that the student may have some problems with using their cognitive strategy, self-checking and effort. Especially worry is another dimension related to achievement and affects the learners during solution process of question format in the standardized examinations. On the light of these experiences, it may be possible to infer that these problems can be faced when rapid change is applied from MC to OE on Turkish examination system. Whether the similar potential problems may emerge exponentially should be regarded according to legends of PISA.

One of the repeatedly stated reasons for Turkish students' failure in PISA 2012 was the discrepancy between the question types of University Entrance Exam in Turkey or other centralized tests and the question types the students encountered in the PISA examination (Eraslan, 2009; TUSIAD, 2013). In our educational system, students are familiar to the multiple choice question formats. However, in the PISA exam, when students encounter open-ended questions, they may experience difficulty as a result of unfamiliarity with the question type (Berberoglu & Kalender, 2005,

TUSAID, 2013). As discussed in the literature part, this difficulty may lead to a decrease in effort and negative affect towards the task being engaged in (Efklides, 2006). Similarly to PISA results, TIMSS results also showed the same pattern. According Güner, Sezer and İspir (2013), one underlying reason for the failure in TIMSS was the inconsistency between the question types utilized in Turkey's educational system and the question types utilized in TIMSS.

Moreover, the assessment part of education with MC items is very popular and has become a pattern that causes an irresolvable negative effect on education systems. For example, as MC became the most popular means of testing, learners became familiar with the procedure of test taking strategies instead of developing cognitive strategies (Alderson, 2000; Brantmeier, 2005; Wolf, 1993). As a result, teaching methods to prepare for testing have contributed to a new phenomenon. Berberoğlu (2009) clearly affirmed that students used memorizing strategies and there was a tendency to educate them on the characteristics of different types of test questions. Unfortunately, in Turkey, the evaluation system has triggered this abnormal phenomenon of testing through MC as if it was the only way in assessing learners' cognitive abilities. On the other hand, it is possible to defend MC approach due to the fact that MC employs a narratively short but excessive number of questions and as a result, discrepancy tends to decrease whereas reliability increases. Therefore, in order to increase the level of well-measured cognitive abilities, preparing and employing qualified questions become necessary. Qualified questions increase the level of measured cognitive abilities due to the fact that a disadvantage of one format can be disregarded by an advantage of another format of an examination (Gültekin & Çıkrıkçı-Demirtaşlı, 2012). Furthermore, as consistent with Innami and Koizumi (2009), it is declared that there is no perfect and ideal test format that appropriately functions in every condition. Making the best selection amongst the measurement tools for the sake of learners depends on coherency of the nature of the question formats and the subject matter in different contextual settings.

The fact that there has been a growing dissatisfaction with traditional assessments through MC leads to necessity for alternative assessments such as OE

(Dietel, Herman & Knuth, 1991; Hambleton, 1996; Phye, 1997). Generally, the opponents of MC format questions, used in both national and international large-scale assessments, explained that the reason for finding alternative measurement strategies was to test both students' memorization and understanding of material as well as the content of the lesson. They should show reflection of their abilities on the subject. Hence, such strategies should be accounted for showing what the students gained as knowledge and skills rather than selecting the correct answer from a set of alternative choices such as 4 or 5 a,b,c,d options (Baker, O'Neil & Linn, 1993). Therefore, they believe that OE question formats provide complex and higher thinking skills and thus, students' depth of response qualities emerges. In this respect, there was a crucial shift between MC and OE, and this has contributed to a dilemma amongst researchers.

It is crucial because the tendency to teach children in order to make them pass the test (like focusing on solving MC immediately) can be seen as a barrier than a bridge to educational opportunity (Dietel, Herman & Knuth, 1991). Students begin to force themselves to adapt to dominant features of standardized tests and place importance on solving MC questions instead of engaging with the actual subject. In addition, Bush (2001) points out that MC cannot reflect the abilities of students because of the fact that students tend to achieve artificial results due to the guessing approach. Also this shift discriminates MC and OE in terms of worry so that MC is preferred to make the learners feel at ease whereas OE requires "more" from students. Moreover, MC compels students to achieve surface level understanding rather than in-depth reasoning (Struyven, Dochy & Janssens, 2005). The fact that the learners can adapt themselves for more cognitive strategies and self-checking has also required the shift. Effort is another concern that, as stated by Struyven, Dochy and Janssens (2005), MC does not allow children to make an in-depth effort.

Supporters of OE state that the qualities and depth of students' responses are better seen in OE due to the fact that OE questions provide opportunities to reflect their cognitive structures by collating content on the basis of related context. These kinds of items give more information about school children's higher order abilities

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than MC formats (Lukhele, Thissen & Wainer, 1994). Foong (2004) pointed out that while students are reasoning and making associations and constructions between concepts, their ideas become visible and they comprehend and express their knowledge by doing both calculation and interpretation about missing information in OE (Akay, Soybaş & Argün, 2006). In this case, when constructing their own answers, learners also need to provide justification and explanation for their answers (Cai, 1997). Beyond this process, students' answers can be analyzed not only in terms of correct answers but also completeness of their solution strategies and reasoning.

OE tasks measure objectives which are difficult to assess by MC. According to literature, it is also highlighted that OE item types are not questions which demand one correct answer. Instead, they provide opportunities for students to demonstrate their knowledge which varies according to their choice. For instance, students are not restricted with options given by an authority so that they can construct their own logical and epistemological answer. Even if they cannot reach a concrete result, which is an unavoidable requirement for MC, they can at least express their thinking in a way that does not reflect lack of knowledge. As Badger and Thomas (1992) emphasized, both the students' level of reasoning abilities and achievementas well as the quality of teachers' way of teaching can be discovered (Husain, Bais, Hussain & Samad, 2012). On the other hand, sometimes performance of MC can rely on information familiarity or restricted range of options. Through encountering with constructions of MC, learners may acquire cues from answers.

On the contrary, supporters of MC format indicated that the reliability of OE items is somewhat lower than that of MC (Beller & Gafni, 2000). More items can be applied in a limited time and scoring can be performed reliably and quickly. It should be chosen for measuring students' procedural knowledge rather than high level thinking skills (Mehrens, 1992; Silver, 1992). Moreover, other viewpoints suggest that MC format is easier than OE, thus, students' performance would likely to be higher (Arthur, Edwards & Barrett, 2002; Davey, 1987) and also, cognitive similarities and differences may cause confusion in some OE problems.

Heck and Stout (1998) also affirmed that MC items produce valid test scores due to the fact that they eliminate questioning with regard to bias. The students reflect their high performance through MC rather than OE and under certain circumstances; their exam performance may be adversely affected by OE problems. In other words, learners can be assured that their scores will not be biased as a result of administrating problems in MC. Moreover, MC can be graded faster, providing more efficient means of communicating diagnostic results to schools, teachers, and students. From a more optimistic point of view, Alonzo & Steedle (2008) stated that MC offers a set of conceptions to consider by narrowing the range of possible responses due to the nature of this format.

However, MC is often chosen due to popularity that triggers learners to be familiar with the procedure (Alderson, 2000; Brantmeier, 2005; Wolf, 1993). Students who are well trained in MC become successful in finding answers even if they do not know the answer for sure.

Based on the aforementioned problems, similar discussions about a necessity for a new assessment system have taken a significant place in the media in Turkey. One of the reasons was that due to rapid changes in science and technology since the 21st century new necessities and globalization led to an ineffective education system (Gedikoğlu, 2005). Rote learning predominated the Turkish education system. The knowledge memorized with the anxiety of passing a grade was not permanent. It was also mentioned by Gedikoğlu (2005) that education politics and philosophy should be reviewed so that the elements of educational system such as curriculum can rely on the reality of the country and the world.

Along with renovation efforts over Turkish Examination System for middle school students, Kazakhstan system where the national exams contain both pre-structured and open-ended questions has been in consideration to ameliorate existing malpractices in Turkish examination processes. The system has been interpreted as integration of students' mandatory examination results, systematization of curriculum, thinking-movement method, the system following learner's movement, accompanying the students on the way of their aims and development of their skills

by construction of models and projects (TEDMEM, 2013). According to Turkish News in April 2013, the Kazakh system will consist of students' extra-curricular activities for four years, their grades, record of how frequently they participated in competitions and the number of theatres and concerts they attended. (TRTHaber, 2013; Vatan, 2013; Tartanoğlu, 2013). It is believed that OE questions will encourage students to mention about or make inferences from what they have read in the passage. Thus, the MoNE points out that the students do not use their analysis and thinking abilities, rather, they solely focus on the testing system which relies on memorization so that the new system will measure the students' higher order thinking abilities. The questions are aimed to assess the learners' analysis, synthesis, and evaluation abilities. In this framework, publishing information about the questions will be discussed later.

MC, if well designed, may enhance the students' problem solving skills in which they require analysis and application of what has been learned in order for them to make a correct choice amongst the alternatives. Likewise, OE, if ill-designed, may fail to enhance the students' understanding when the question only requires the student to repeat factual information (Moreno & Mayer, 1999).

As a result, deficiencies of discussed and described examination system in Turkey and competition for predomination between OE and MC, which has led to a strict dilemma, highlighted a great need for a scientific, valid, and reliable basis for this debate. Hence, this issue will be researched to provide a benefit for middle school students' cognitive and affective characteristics along with scientific background and bases. On the basis of above discussions, an objective approach over MC and OE formats through examination system will be held in *metacognition* and *affect* aspects such as cognitive strategy and self-checking and worry and effort respectively.

1.2.   Purpose of the study

As expressed in background part of this study, various studies focused on measurement and evaluation, importance of question types, and differentiation between MC and OE question formats. Also, there are many theories about measurement and evaluation, learner's self-efficacy and differential effect of MC and OE type questions. Various features of these measurement and evaluation methods have been researched for the purpose of determining whether MC is better than or alternative for OE or vice versa. However, many problems have emerged about the belief that one method is better or more beneficial than the other in any kind of situation when measuring different knowledge and constructs. In this respect, without any scientific justification, rapid alterations have been considered as useful solutions and applied in Turkish Examination Systems to ameliorate measurement and evaluation process. For example, in one hand, in order to refrain from memorization type of learning, integrating performance type evaluation through the rubric system became popular, but on the other hand, measuring great numbers of students' academic achievement compared to each other caused ranking concerns. Thus, measuring success through multiple-choice approaches has never been abandoned due to its usefulness.

Both in Turkey and in many other countries, the very same concerns are considered essential to study in relation to knowledge construction and individuals' interaction with the question types. This is specifically pertinent to this study for the purpose of differential effects of question formats such as OE and MC in mathematics assessment on metacognition and affect as conducted by O'Neil and Brown (1998). Their study provided an insight for practitioners in that there were various problems related to the existing concepts about the state examination system. For this purpose, the main objective of this study is to explore the comparative effects of OE and MC exams with regards to metacognitive and affective dimensions according to the new large-scale examination system in Turkey. First of all, the study will reveal what people think about the usability and feasibility of this new

assessment movement and how the replacement of MC with OE is perceived from different perspectives. Also, the study is aimed to investigate the differential effects of MC and OE on students' metacognitive and affective characteristics in terms of *worry, effort, self-checking, and cognitive strategy*. In this regard, the proposed research would

(a) discuss how the differences between MC and OE questions in terms of their strength and weaknesses are perceived,

(b) perform classification of metacognition by self-checking and cognitive strategy, and of affect by effort and worry with regard to MC and OE, and

(c) discuss the convenience of MC and OE in large scale assessments from the viewpoint of middle school students, their teachers, and academicians.

Based on the purpose of the study stated above, one major research question and several sub-questions have been formulated as follows:

1. What are the perceptions about MC and OE related to metacognition and affect for middle school students', teachers' and academicians' point of views?

1.1. In what ways do perceptions differ in relation to MC and OE through different dimensions?

1.1.1. How do senior middle school students perceive OE and MC?

1.1.2. How do teachers perceive OE and MC?

1.1.3. How do academicians perceive OE and MC?

1.2. What is the difference between MC and OE questions in terms of students' metacognitive dimensions--cognitive strategy and self-checking-- and their affective dimensions--such as worry and effort?

1.2.1. How are students' metacognition investigated by MC?

1.2.2. How are students' affective dimensions investigated by MC?

1.2.3. How are students' metacognition investigated by OE?

1.2.4. How are students' affective dimensions investigated by OE?

1.3. Significance of the study

This study was conducted to shed light on the dilemma addressing the selection reason of OE question format over MC in Turkish State Examination System after the alteration called as 4+4+4. The end product was to determine how MC and OE differentiate in terms of students' cognitive strategy, self-checking, worry and effort in Turkish educational context. The interview questions was adapted from O'Neil & Brown (1998)'s study to ask students', teachers and academicians ideas about the contribution of MC and OE on middle school students' metacognitive and affective qualifications. The effect of item format on metacognitive and affective processes of children were examined in the context of a large-scale mathematics assessment program by O'Neil and Brown (1998). However, the current study was conducted:

- to resolve the conflict in Turkey about the fact that OE must definitely be used in large scale assessments such as Transition from Primary to Secondary Education Test (TEOG) by completely disregarding MC.
- to clarify scientific background for pros and cons of OE against MC or vice versa to provide for a neutral perspective and an extensive discussion on metacognition and affect with their sub dimensions; self-checking, cognitive strategy, worry and effort.
- to provide guidelines for the Ministry of National Education (MoNE) and policy makers to make adaptations in the Turkish Examination System for middle school students in order to completely replace MC with OE.

Consequently, this study is one of its types to research through scientific approach to explore MC and OE with metacognition and affect including cognitive strategy, self-checking, worry, and effort in Turkish context. It provides a positive contribution to the field of measurement and evaluation in fundamentals of curriculum and instruction and becomes significant for new Turkish Examination System tendency of measuring and place in students by using OE results. It discusses the results of a quick-fix short-term approach with regards to a large-scale

examination system and avoids prejudiced arguments by virtue of fundamental scientific background. Middle school students' cognitive strategy and self-checking behaviours during MC or OE exercises have been analysed in the field. Also their affective characteristics such as worry and effort while solving OE or MC question formats have been already researched separately in the literature of the field. In literature, there are few studies conducted on the differential effects of OE and MC (Akay, Soybaş & Argün, 2006; Gültekin & Çıkrıkçı-Demirtaşlı, 2012; O'Neil & Brown, 1998; Özuru, Best, Bell, Witherspoon & McNamara, 2007) are available. However, it is an inevitably important issue and should be analyzed various aspects. Before conducting large-scale implementations, realities of assessment types and their impacts on student achievement should be clearly understood. Therefore, this study is aimed to explore these aspects from multi-dimensional perspectives and explain such aspects from a scientific perception.

Also, OSYM had been preferred to use MC question format in large-scale assessments because MC has been seen as particularly most popular question format. It can be read quickly and be more objective to grading…etc. However, the same institution insists on changing selection system to OE. Why MC is thought to be changed totally with OE format creates a dilemma although it has many advantages. Since, any scientific results shared with the media, families or educators that support this change. In this case, a scientific approach has been seemed to require answering the major question "what are the perceptions about MC and OE related to metacognition and affect for middle school students', teachers' and academicians' point of views?." Middle school students, teachers, and academicians' perspectives are considered important to the topic. Consequently, the main significance of this study is to open a discussion about a recent issue in relation to differential effects of OE and MC over new examination system of Turkey accepted between the 2012-2013 education semesters.

1.4.   Definitions of terms

Open ended items are formats which require learners to formulate their own answers with several word or phrases. They include a wide range of formats from simple fill-in items to complex performance assessments. They can be under two categories such as constructed response and free response.

OE questions are set of items that may have been presented, selected and sequenced to lead the examinee to a culmination such as explanation, decision, recommendation, final expression of understanding that reveal complex thinking. They are designed to encourage full and meaningful answers using the subjects' own knowledge and/or feelings. They enable participants to respond in any way that they please with a more natural language (Johnson & Christensen, 2004).

OE asks respondents to evaluate an attitude in their own words and being unrestrained by the particular dimensions provided by the researcher (Haddock & Zana, 1998). It asks reasons for each answer and observer's reflection. It can be content analyzed to determine the cognitive, affective and behavioral responses most frequently elicited by respondents. Unstructured question types are in which the respondent answers with his/her own words instead of choosing from suggested possible answers. This format begins with what, how, when, where and why and provides qualitative information rather than quantitative.

They are also called free response tests that employ problems which have no single right answer or answers that differ in quality. Scores are obtained to show not only the appropriateness or quality of solutions but also numbers and their being usual or original (Ward, Frederiksen & Carlson, 1980).

Multiple choice items are formatted with a stem and three or more options from which learners are required to select one. Namely, it requires the examinee to select one correct answer from a short list of options.

A multiple choice question can be described as being made up of three parts: (i) the stem in which the body of the question is presented and any necessary

information is given; (ii) the correct response, and (iii) the distractors, the incorrect responses (Snow, Monk & Thompson, 1996).

Examinee is required to select one or more answer from a list of options (Ferrara, Huyhn & Baghi, 1997). MC is described as a question that forces participants to choose from a set of predetermined responses (Johnson & Christensen, 2004) and a question format that limits respondents with a list of answer choices from which they must choose to answer the question.

It can be classified as right answer, item root and item grouping (Talim Terbiye, n.d.). Their types are True answer, False answer, Odd-one-out, Most accurate, Extension, Statement and logical relations, Grid format…etc. (Learning Guide, 2009).

"The list of some of the most common types of MC are application questions including extrapolating from results of a study as well as solving problems; degree of applicability asking the respondent to pick the most important response; dates and statistics which are straightforward memorization questions; flipping the term and definition like fill-in blank question; multiple option where one of the possible response is 'all of the above' option; negative option and sequence of events putting several elements into a logical sequence" (Gillespie, 2008).

Metacognition is the process by which individuals think about their own thinking to develop strategies to solve problems and defined as cognition of cognition (Flavell, 1979). It can be also defined as an individual's ability to think about his/her own thinking while performing a task. It has some subcategories such as monitoring, self-checking, awareness (Yıldırım, 2011) cognitive strategy, and planning (Yıldırım, 2011) or goal setting, attending, and rehearsing (Borkowski & Burke, 1996). Planning, organizing, prioritizing, shifting mindsets, monitoring understanding and self-checking can be arranged under the heading of metacognition (O'Connor & Vadasy, 2011). It is also measured by planning, self-checking, cognitive strategy and the other elements are effort and worry (Yunus & Ali, 2008).

Cognitive Strategy is a goal-directed and consciously controllable process that facilitates or supports performance as learners develop internal procedures that enable them to perform desired skills. It can be general or domain-specific. In other words, general strategies imply problem-solving techniques through a wide range of situations whilst domain specific is useful in a specific circumstance that can be transferred in other circumstance (Mcewen, Huijbregts, Ryan & Polatajko, 2009).

Self-Checking is a self-monitoring one's performance when engaging in a task (Shaughnessy, Veenman & Kleyn-Kennedy, 2008).

Affect is a psychological term which states the experience of feelings and emotions. Also it is a generic term for emotions and other mental states that have the quality of pleasant-unpleasant, such as feelings, moods, motives, or aspects of the self, e.g., self-esteem (Forgas, 1994). It can be classified by effort and worry.

"Affect is a physical reaction of students to testing situation such as fear, physical discomfort or nervousness" (Lufi, Okasha & Cohen, 2004, p. 177).

Effort is the willingness to keep trying and the mental strength or willingness to persist to complete a task (Awang-Hashim, O'Neil & Hocevar, 2010). It implies the students' will not to give up even if the assessment is hard.

Worry is students' self-evaluation about whether the assessment type is suitable to measure their cognitive abilities and cognitive components of anxiety experience. (Awang-Hashim, O'Neil & Hocevar, 2010).

It is a cognitive distress connecting to testing situations (Lufi, Okasha & Cohen, 2004) and is also related to more performance decrease than the emotionality factor (Covington, 1992; O'Neil & Fukumura, 1992).

One of the first attempts to define worry was offered by Borkovec, Robinson, Pruzinsky, and Dupree (1983, p. 10): "Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable; it represents an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but

contains the possibility of one or more negative outcomes; consequently, worry relates closely to the fear process."

Meanwhile, worry and effort which are affective terms can be classified into two domains such as state or trait. For instance, trait effort points out the extent to which one generally works hard on a task. "I put forward my best effort on tasks" sentence is given as an example. Trait worry is a cognitive concern, additively an affective construct, about consequences of failure in a test situation. It can be named as a constant personality trait in response to evaluative situations (O'Neil & Fukumura, 1992; Spielberger, 1975). "During examinations I get so nervous that I forget facts I really know" sentence is given to illustrate the trait worry.

On the contrary, state effort, which is somewhat different than the trait effort, is about people's temporal force expended for a specific task and willingness to keep trying. State worry is about level of worry people experiences while taking a test. It varies in terms of intensity across situations. "I am worried I would get a bad grade" sentence is given as an example.

In this current research, cognitive strategy and self-checking was selected as categories of metacognition, and worry and effort was selected as categories of affect even though many other dimensions exist because these dimensions were mentioned as one of the most important indicators to reflect metacognition and affect. Also, these had been selected as prominent dimensions in O'Neil and Brown (1998)'s study. It was indicated in their study that cognitive strategy and self-checking skills can improve learning during state metacognitive learning behaviours. Due to the fact that metacognition is an effortful issue in testing, students' effort and worry can be determined in their activities in testing situations. These dimensions are specific to learning situations and, emerge as intentionally and goal-oriented conditions such as statewide assessments (Weinstein & Meyer, 1991, as cited in O'Neil & Brown, 1998).

CHAPTER II

LITERATURE REVIEW

The literature review was carried out for the purpose of determining what information and research had been previously recognized about the focal topics of where or in which part the measurement and evaluation was attached to curriculum, the importance of it, as well as the differential effects of multiple choice and open ended question formats.

Specifically, the review of literature was constructed around four main themes for the purpose of explaining to the reader to understand what is meant by discrepancy effect of MC and OE and their association with metacognition and affect constructs. The main leitmotifs are how metacognition is explained by MC and OE, how affective characteristics such as worry and effort are clarified by MC and OE and multiple perspectives of MC and OE with regards to cognitive strategy, self-checking, worry and effort. Also various research studies on discussion about appropriateness of MC and OE over large-scale assessment and aforementioned constructs were explained.

The curriculum concept (Bobbitt, 1918, as cited in Ornstein & Hunkins, 2004), namely as a guiding spirit of track, had emerged in the history scene in the pursuit of 1920s, many definitions of the curriculum was suggested and used (Demirel, 2012; Ertürk, 1975; Oliva, 2009; Ornstein & Hunkins, 2004; Varış, 1996). Sometimes it can be defined as social engineering arena and sometimes can be described as a design, which has a certain framework, retaining its flexibility and scientific core. However, it can be renovated according to alteration of national and international areas, which shows a part of a work, sequence of the parts and its duration as well. Principle features of the curriculum are; 1) having a methodological structure, 2) requirement of decision making, 3) being dynamic, 4) necessity of team work, 5) existence of phases like planning, instruction (application), and evaluation.

The main elements of the curriculum are aims-goals-objectives, content, teaching and learning experiences (instruction) and evaluation (Demirel, 2012; Tyler, 1949). Even if the aims, goals, and objectives are used interchangeably, they are different concepts in curriculum context. Aims are general statements of intent. It describes the direction where students will go in terms of what they might learn or what teachers will provide to them. Generally they cannot be measured easily because there is nothing specific to check whether they are met. Goals are like the mediator between the former and the latter. It is something educators work toward a set point (Noddings, 2007). Objectives are more strategic goals that require more organization and planning. They are specific statements about what students will be able to do after an experience (Harden, 2002). It is measurable quantitative or qualitative and setting targets on the way of achieving the goals. Instructional design (ID), which is another element of curriculum corresponding to practice of creating instructional experiences, is systematic way of suggesting a structure and giving meaning to an instructional problem by helping to visualize the problem and breaking into discrete and manageable units. In addition, ID is a systematic reflective process of applying instructional principles into plans by material, activity, resources and evaluation (Morrison, Ross & Kemp, 2001; Smith & Ragan, 2004).

On the other hand, another indispensable part of the curriculum is called measurement and evaluation, a process in which a quality is specified with a numeric value by observation or other symbols and after that, a value judgment is made on the basis of a criterion. Measurement and evaluation is an important step because whether curriculum and essential instructional design serve a purpose is determined. In conclusion, the fact that the curriculum is a system whose fundamental factors should work in harmony in itself is possible when this system is filtered by the philosophy of education (Ozmon & Craver, 2008) and the corresponding educational approach.

It can be stated that Turkish education system has a centralized structure so that education politics are implemented by unaltered way in all classrooms via

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curriculum. Since 1950s, the measurement and evaluation system in Turkey (Koç, 1993; Kutlu, 2003) is applied as large-scale assessments for school children from middle school through high school levels. Throughout years, students' thinking, problem-solving strategies and cognitive developments with the help of multiple-choice questions, which are so called traditional measure of students' performances, are measured. If multiple-choice questions fail to satisfactorily assess the intended outcomes, some alternative assessment techniques (e.g. short answering, open-ended, true-false types…etc.) may occasionally be required.

2.1.   Historical Background of Usage of Multiple Choice and Open Ended Question Formats

The direction of change of behaviors and level of achievement in education and instructional process can be best understood by appropriate measurement and evaluation approaches. Measurement and evaluation procure determining inadequate and deficient side effect of a specific curriculum; fruitful input and referral for program development process. Data gathered from the results of detailed analysis of measurement and evaluation can be useful in the case of paradigmatic decisions through education and instruction process (Semerci, 2007; Tan & Erdoğan, 2004).

For this tenet, implicating many measurement and evaluation strategies has been required since none of them has been considered as a sole determinant of a solution. As indicated by Manning and Manning (1995), traditional measurement and evaluation methods measure the learners' knowledge in a certain period of time and they are effective in a significant time interval. Moreover, they cannot measure elaborated success, ability and knowledge; and cannot manifest mental schema of cognitive comprehension appropriately (Shepard, 2000). Dependency on a one-way or single measurement method prevents to depict the actual performance and becomes inefficient in gathering proper information about development process (Chen & Martin, 2000; Cuberton & Laongo, 1999, as cited in Yesilyurt, 2012; Curtis, Hunley & Chesno-Grier, 2002). On the other hand, diversity of measurement

and evaluation supply different perspectives on finding out the amount and quality of students' acquired knowledge (Anderson, 1998; Dochy, 2001; Shepard, 2000).

In educational process, through observations including measurement and evaluation activities; on which level students' behaviours are, what kind of inefficiencies exists and even whether or not there are any negative or undesired behaviors can be determined. In Turkey basic concepts and applications related with measurement and evaluation began to be contributed by Prof. Dr. Sadettin Celal Antel's book "Test Usulü" in 1932. Measurement and evaluation system had explained with the concepts of exam, grade, passing grade and fail. Generally, the concepts of measurement or assessment had begun to be used in program development and guidance applications since 1950. In 1953 Test Research Bureau (TAB) was established under the Instruction and Education Council (Talim Terbiye) to support developments in the field of measurement and evaluation, and attribute these studies into scientific basis. By using tests, entrance exams had been applied for student admission. The first central examination had been suggested in 1960s because of the fact that open-ended exams had been applied until when they criticized in terms of inefficiency on quick reading and reliability. Also the exam sheets were divided into four groups and evaluated by different individuals. So, some drawbacks about quality and admiration gap between evaluators had emerged. In the light of these historical improvement necessities, central exam model such as using MC was accepted and in 1974 application difficulty of MC necessitated to establish a new center called University Selection Placement Center (ÜSYM). At the end of 1974 Interuniversity Council regularized ÜSYM in which the president was Prof. Dr. Altan Günalp. After 1980s, structural features of tests and testing were studied (Kutlu, 2003).

Amongst many measurement and evaluation strategies, two of the most extensively used are multiple choice and open-ended techniques. However, in terms of strategy of these techniques, they concentrate on measuring different types of cognitive development and knowledge. In a very basic way, it can be said that in

everyday implementations MC concentrates on remembering, distinguishing, selecting, and so forth whereas OE focuses on understanding, explaining, justifying, and creating. To be more specific, MC question items have been composed of many items, each with its own stem and a set of alternatives. One is the correct answer while the others, called distracters, are false. Historically, in the early days of large scale testing introduced in 1930s, the undesired goals of MC was to rank children instead of determining if they attained a particular level of knowledge (Wineburg, 2004). The dilemma we face today in assessing young people's knowledge differed in 1971. Wineburg (2004) mentioned, "We use these tests and will do so in future not because they are historically sound or they predict future engagement with historical study but because they can be read by machines that produce easy to read graphs, the illusion of systematicity" (p. 1413). They stress that scoring them costs a great deal more than other alternatives. Mechanical testing gives the false impression of promisingefficiency while there is an easier, less costly, and more scientific way.

Open-ended question format, on the other hand, supposed that these kinds of traditional tests ended with narrowing both learning and teaching. Hence, going beyond the remembering or memorizing, reproducing or creating new knowledge, or building a new knowledge onto existing one, and measuring them through alternative ways became a necessity for educational process. In this case, tests could be sensitive to measure how well children can use knowledge in an interrelated way. The students and teachers require test items where learners have to analyse, interpret and evaluate what they gathered from resources, learned and explain their arguments. This situation triggers something that is called OE question formats. Examinees have to show not only "what" but also "when, why and where" requiring more judgement, produce reasons and justifications and explain their arguments (Dochy, 2001). Dochy adds that even if these kinds of items such as MC are less threatening as fairer, test items such as OE should demand causal relations and explanations. Also, there is no single answer, since there are possibilities of more than one correct answer for OE naturally (Panackal & Heft, 1978).

Furthermore, development of OE lays the fact that ideas hidden in MC can be measured by only a selection of items and ideas that lie in the frame of question stems with following answer choices. Reich (2011) indicated in his study, which supports the proponents of OE that question formats except OE focus on narrow facts and reduce the concept subject knowledge as well as context. As a result, there has been an increase in usage of OE as an alternative and promotive measurement type.

2.2. Strength and Weaknesses of Multiple Choice and Open Ended Question Formats

There are many studies that enhance the affirmative sides of both types of formats. MC is helpful for the understanding of facts across a broad range of topics. OE is helpful for organizational and productive skills in more limited content domain. Also subjective scoring relatively narrows content coverage and is less reliable than MC. MC and OE measure separate constructs. Students who have higher ability of solving OE and lower on MC did well on other essay types. Students who perform well in OE may perform poorly in MC (Bridgeman & Morgan, 1996). In addition, Ward, Frederiksen and Carlson (1980) clearly propose that OE and MC cannot be considered alternates forms of same test since the correlation between the corresponding scores from the two forms is low. Also, psychometric researchers have been gathering rare evidence about the fact that one test is a more efficient predictor of a criterion than the other. This complex criterion makes the inference that one is measuring something different from the other. Frary (1985) also highlighted on the same issue that OE measures psychometrically different constructs and objectives and free responses can be given accordingly with OE, though MC is ponderable to be supported in terms of easy to mark according to the cost benefit consideration. For instance, there is no guessing factor in OE therefore, the validity issue is high, and on the other hand reliability is high in MC (Panackal & Heft, 1978). Heck and Stout (1998) supported the dilemma that in terms of construct measurement, MC necessitates recognition and recollection with

children. In a psychometric standpoint, OE contains measurement error so that such an error affects reliability and validity.

Additionally, OE provides sustainability and reformulation. Due to the influence of inappropriate prior experiences and biases, it requires a challenge in reflection of cognitive constructs of solver's activity. OE retains a conceptual ambiguousness for solvers since the nature of what the solvers interpret can be viewed as problematic and can change when the examinees develop their understanding (Cifarelli & Cai, 2005). Thus, reliability of OE items is fairly lower than MC items because item format and item content for cognitive operations are better measured by a particular item format (Beller & Gafni, 2000).

Johnson, Sieveking and Clanton (1974) had been enlightened with the thought that the beneficial reflection of OE measuring strategy is revealed when it is mixed with MC as an alternative positioning. MC should be used as complementary with OE to elicit unanticipated responses. The aim of the usage of OE and MC together in a questionnaire design should measure imponderable subordinate behaviour and abilities. It can be reached if and only if OE is placed at the beginning of the test, before MC questions even though some researchers remark that there is no effect of the length of the questions on item quality (Burchell & Marsh, 1992; Johnson, Sieveking & Clanton, 1974; Krosnick & Presser, 2010).

2.2.1. Strength and Weaknesses of Multiple Choice Question Format on Research

Haladyna (1997) stressed and provided justification that MC tests can evaluate a high number of abilities with easy grading and objectivity. However, with this question format it is possible to measure only some cognitive level abilities such as knowledge, comprehension, application, and analysis. Nonetheless, there are also higher cognitive level abilities that individuals require to evaluate or synthesize the knowledge they have learned in order to show reflection of their learning. In this perspective, Foong (2004) promoted these views that the students' reasoning and

relation construction abilities require a synthesis level of thinking between concepts to which some OE questions may provide.

MC format was seen efficient to mark and as objective as other question formats which is not subjective. During marking, it is seen useful in consistency and reliability. The features of reduced need for cross checking and efficiency in marking can be evaluated as the strengths of MC. In addition, MC can cover a huge part of a syllabus and provide teachers, academicians or instructors a faster grading chance than other measurement formats. MC tests were also considered to be great reliable tools that can be inferred like their fairness (Farthing, Jones & McPhee, 1998). On the contrary, MC was criticised in terms of being answered simply by guessing, assessing only trivial recognition of facts rather than higher levels of thinking such as synthesis level. Offering a choice of answers rather than construction of answer by the learners was regarded as one of the main weaknesses of MC. Conversely, MC is criticized for its narrow focus and its tendency to decrease the concept of knowledge to only verify the facts (Wineburg, 2004; VanSledright, 2008). Reich (2011) defines MC exams: "they are cultural tools for disseminating an 'official' collective memory" (p.507). They promoted the idea that young children have been taking MC throughout their lives by even repeatedly at all school levels. Other criticisms on MC concern that certain aspects of some abilities can be only measured with OE in which examinees have an opportunity to organize and generate their own answers. From another perspective, supporters of MC argued and clearly specified that abilities can be assessed by objective procedures so that the correct answer chosen from presented alternatives is required (Ward, Frederiksen & Carlson, 1980).

At this point, Yeşilyurt (2012) researched on measurement and evaluation methods in science and technology lesson and encountered difficulties with 54 science and technology teachers in 2009-2010 semesters. Semi-structured interview questions were used according to qualitative data gathering. Teachers' point of views about essay, MC, true-false, matching, fill in the blank, performance and project preparation were collected. It was stated that the most preferable measurement

techniques that teachers had used were OE, fill in the blank and MC respectively. As a result, the teachers mentioned that the students could not express themselves or reflect their actual knowledge in OE. They wrote whatever came to their minds during fill in the blank. They found the answer by chance in MC, true-false and matching, obtained ready-made homework from the internet, and received help from their families. Therefore, they could not construct their own unique and original materials. The central comment was especially on the comparison of MC and OE.

Yeşilyurt (2012) indicated that the students have a limited ability to express themselves in OE, therefore, there is no efficiency of this technique. OE is open to comment since it affects grading procedures which causes difficulties in grading. OE was also criticized in terms of difficulty on objective evaluation and the students' lack of ability in limiting their responses and also the students tend to write either very long or very short answers. It is also highlighted that OE format should not be a problem for the students who study enough and are aware of their knowledge. On the other hand, another result of the study showed that MC cannot be preferred from the point of allowing students to find answers by chance, reminded by the alternatives, and the fact that students can be confused by negative item roots.

2.2.2. Strengths and Weaknesses of Open Ended Question Format on Research

Generally, researchers (Stecher, Klein, Salano-Flores, McCaffrey, Shavelson & Haertel, 2000) prefer to investigate the differential effects of MC and OE question formats with regards to content/domain, format and level of inquiry. They believe that there has been an increased usage of OE (Aschbacher, 1991; Bond, Braskamp, van der Ploeg & Roeber, 1996, as cited in Stecher et. al., 2000). The users should consider that several task application and large amount of testing time are needed to produce scores that are reliable enough to allow reporting results for individual students or classrooms. Rapid shifts should be interpreted carefully. It should not be ignored that some topics are very sensitive to measurement method (Shavelson,

Baxter & Pine, 1992). An increased use of OE measure depicts a better understanding of the task measure and the factors that affect the scores.

One of the major strengths of OE is to allow the respondent to express an opinion without being influenced by an examiner (Foddy, 1993) since given responses, as in the case of MC, limit the learner to select one even if s/he is not sure and wants to give any response spontaneously. It is believed that suggesting constructed responses to exam takers may result in bias and, to avoid this, OE exams can be selected as an alternative although it has some weaknesses. For instance, OE requires extensive coding and non-response larger items, and it produces more missing data than close ended one. OE should be explicit in their wording so that the reader cannot be stuck with any cognitive conflict (Reja, Manfreda, Hlebec & Vehovar, 2003).

Ward, Frederiksen and Carlson (1980) draw attention that cognitive process depends highly on personality characteristics which are relevant to one's motivation. Reasoning ability requires drawing an inference from information and flexibility of thinking to see problems from a new or personal perspective. They wanted to determine the effect of the administration of free response (OE) and MC tests and to find the difference between utilization of MC and OE with 61 advanced students from psychology major and 174 paid volunteers from 11 diverse undergraduate seniors. The results showed that MC and OE cannot be an alternate form of the same test and the correlation was low. In terms of quality score, MC and OE correlated with both cognitive and personality factors. Knowledge was an important resource for both of them. In terms of production of number and unusualness of ideas, correlations are appreciable for OE so that when the subject produced ideas, they applied some sort of evaluative approach which requires reasoning as well as knowledge. Based upon this study, it was concluded that conventional tests constructed generally in favor of MC offered more efficient measurement of the same abilities whereas OE relied on the abilities determining performance when the subjects evaluated alternatives presented to them for choice. The other indicator of

their study was that OE has some liabilities such as being complicated, time consuming, and difficult to develop. Also it was less reliable than MC. A positive property suggested that OE showed face validity and it appealed to subjects. As a result, it was discussed that psychometric characteristics could be improved with additional experience in test development since, what's important was that standardized problem context should be useful to clarify the connection between domain and the problem that the examinee have to solve in scientific work and problem solving.

2.3.   The Classification of Metacognition and Affect

The world is becoming more complex and more information rich so that multidimensional thinking is a desired characteristic for today's learners.   This thinking mainly requires core judgmental abilities and can be named as metacognitive skills. In this case, metacognition forces learners to develop ideas and make critical evaluations in terms of quality in thinking. As an illustration, when a teacher thinks aloud during problem solving, his/her verbalization can be a powerful source for his/her students' cognitive processing which can be ready to be internalized.

Martinez (2006) examined these constructs which were metacognition and affect. Metacognition refers to "cognition of cognition" (Flavell, 1979, as cited in Efklides, 2006, p.3). Affect refers to the state of emotions and mental orientations such as mood, self-esteem, etc. Studies, however, reported that both metacognition and affect have some influence on learning (Efklides, 2006). Unlikely previously conducted studies, this particular study of Efklides (2006) treated these construct in an integral way, namely metacognitive experiences (ME). ME is different from mere facets of both metacognition and affect since ME involves metacognitive emotions which both include affective and metacognitive responses. Efklides (2006) suggested this character of ME could explain the unexplained facets of learning.

Before laying out the full picture of the ME, Efklides (2006) provided a brief explanation of metacognition facets, and then he described ME in detail and tied ME to the affect construct.

2.3.1. Facets of Metacognition

Metacognition is a cognitive phenomenon and refers to one's stored knowledge or belief about himself (Flavell, 1979). Therefore, metacognitive experiences include both conscious affective or cognitive experiences that occur during an enterprise (Livingston, 1997). Efklides (2006) suggested that metacognition has two roles. The first one is, through monitoring, forming a representation of cognition and the second is generating the control on the cognition based on the formed representations. According to Efklides (2006), the monitoring role included two sub-constructs, namely metacognitive knowledge and metacognitive experiences. Control role included metacognitive skills.

Metacognitive knowledge included implicit and explicit knowledge about self and knowledge about the task being engaged which compromise knowledge of strategies utilized to solve the task, and knowledge of task structure (Flavell, 1979).

Metacognitive experiences included the metacognitive feelings and judgment while dealing with the presented task. If you presented a mathematics problem to a student, the *feeling of familiarity, difficulty, and confidence* have some influences on the learner. For instance, the feeling of difficulty arises from several reasons such as task context, a person's cognitive ability, self-conception, and mood while dealing with the task (Efklides et al., 1997). If the learner feels that the task is easy and is self-confident about his or her cognitive ability, this learner will generate a positive mood towards the presented task (Efklides, 2006).

Additional sub-construct of ME are *judgment of solution, correctness and the confidence, and satisfaction with solution* (Efklides, 2006). These three sub-constructs monitor the outcome of the process.

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Metacognitive skills include procedural skills to solve the task which are the necessary steps to solve the task, the order of these steps, and what can a person do if the steps did not function as planned (Efklides, 2006).

2.3.2. Metacognition in Relation to Affect

The findings of Efklides and Dina's (2004) study suggested that there was a correlation between affect and ME. For instance, positive affect implies the easy going process of task engagement. The learner can work on the given task without feeling too much strain. In addition, Efklides and Petkaki (2005) found that if the learner likes what is presented, s/he works on the given task in a more positive mood. As a result of this positive mood, the learner puts more effort into tasks. These sorts of studies pointed out that positive affect has potential to increase the learner's effort and interest on the given task, and increased the likelihood of engaging similar tasks in the future (Efklides & Petkaki, 2005). On the contrary, negative affect towards a presented task increases critical thinking and decreases the focusing ability necessary to overcome the problematic situation (Kuhl, 2001).

Based upon the previously discussed studies in 2011 Efklides developed a model called *Metacognitive and Affective Model of SRL (MASRL model)*. This model mainly focused on "self-regulation of cognition and motivation/affect" (Efklides, 2011, p.10) and examines cognitive, affective, metacognitive and motivational dimensions. For instance, a person's metacognition implies a task can easily be solved, but in the process of solution, experiencing difficulties may result in giving up on the presented task.

Moreover, the MASRL model examined learning tasks and how they should be defined. He listed some task features that determine the definition of a learning task. These are "Novelty (e.g. OE questions are novel to our country), Complexity (e.g. Some OE questions require more complex skills and concepts), Conceptual

requirements, Mode of presentations (e.g. differential format of OE and MC), Instructional Goals" (Efklides, 2011, p.10).

It is suggested that there is an interaction between the task and person dimension in this model. Since when a person deals with a given task following issues are metacognitive signs at personal level in relation to the tasks--a person thinks and reflects on which strategy he or she employs to solve the task, how much work he or she puts into the task, and whether he or she is confident about his or her plans before starting the task. All of these are also related to metacognitive knowledge of task, strategies, and self (Efklides, 2011). The second issue is based on his or her previous experiences on familiar tasks, and he or she expresses either a negative or positive affect (Efklides, 2011). As discussed above, positive affect may result in an increase in effort. The last issue is related to external motivation while a person is dealing with the presented task. For instance, a teacher motivates his or her students with an affirmation such as, "I know you can do it". This type of motivation may result in an increase in self-esteem that is an affective response.

Martinez (2006) claims that, in addition to metacognition, meta-memory and meta-comprehension concepts are created and imply an understanding of one's own knowledge state. In this context, critical thinking, problem solving, conscious and deliberate mental activity, and being a reflective person who has developed critical habits of mind becomes the tools of cognition.

Metacognitive functions are mental operations that direct the individual's cognitive functions and support a learning conceptualization (Nastasi & Clements, 1990, as cited in Kapa, 2007). The more people control and monitor their strategy, the better their ability to solve problems increases. Self-instruction, self-question, and self-monitoring are important factors in metacognitional development of students (Kapa, 2007). Moreno and Mayer (1999) highlighted that during working on MC children behave as if programmed. Working on structured problem, they are programmed to search for one correct answer (Kulik & Kulik, 1988; Morrison, Ross, Gopalakrishnan & Casey, 1995). This causes their thinking to be more outcome-

oriented than a process-oriented goal. Students need to be shown their performance by reflecting on their steps. The process of problem-solving triggers several cognitive and metacognitive purposes and strategies. In this process, corrective feedback and direction help them to find another way to solve the problem. Due to the fact that OE needs to use present information in a new way, it is consistent with the constructivist vision of learning (Moreno & Mayer, 1999).

Metacognitive skills can change in performance when the learners monitor the process in individual and collaborative tests (Filho, 2010). Thus, prospective and retrospective metacognitive judgments (Nelson & Leonesio, 1988) come into prominence. How does metacognition spread out on testing? In an individual testing situation, students who have high metacognition demonstrate better performance and higher confidence. Nevertheless, while collaborative testing, these characteristics can disappear and a lower metacognitive process is activated. Change of strategies (Reder, 1987) during answering questions or confidence judgment on correctness of the test output are the traces of prospective metacognitive judgment but while answering MC, retrospective monitoring begins to function. Metacognitive ability helps students to show more effective test preparation practice, better test performance, superior attributive, regulatory and monitoring processes than its counterparts (Filho, 2010).

2.3.3. Classification of Metacognition as Self-checking and Cognitive Strategy

Metacognition is identified as a higher order thinking that includes active control over the cognitive engagement in learning processes. For instance, activities such as planning how to approach a learning task, monitoring comprehension, and evaluating one's own progress toward completing the task are accepted as metacognitive behaviors. Besides, metacognitive knowledge can be regarded as acquired knowledge about cognitive process and the learners should be held responsible to control their own cognitive processes (Martinez, 2006). The people who have metacognitive skills tend to have great sense of self-efficacy. In this

domain, attributing the success to controllable factors such as effort and strategy use are some of the clues of metacognitive factors. It means that metacognition depends on both cognitive and affective forces. Motivational states such as individual's effortful activity and self-control can be provided to high level cognitive goals. So the power of planning how to approach any responsibility, monitoring a learning task comprehension and evaluation one's own progress can be attained by less threatening and more attractive moods thanks to effort justification.

Metacognition includes self-checking, planning, awareness, and cognitive strategy. Format affects meaning of test score by restricting nature of content and measured process (Bennett, 1993; Katz, Bennett & Berger, 2000). Cai's (1997) study "Beyond computation and correctness: Contribution of open ended task in examining US and Chinese student's mathematical performances," studied cognitive similarities and differences confound with the some OE problems. An OE tasks measure important objective that cannot be easily measured by MC. However cognitive analysis required to be more informative. During OE problems students may not memorize or review the information (Ko, 2010). It is stated that MC format is less of a burden than OE. Students can get some cues from choices.

According to Hong and O'Neil (2001) cognitive strategy is aimed at straight forward cognitive goal of simply improving the individual's knowledge and invoked to make cognitive progress. Metacognition is also antecedent to monitor this progress. In addition this, the process is described as how much emotional change the examinees experience from before the exam began to when they use the technique. As consistent with the iterative correlation between cognition and affective emotional alterations, cognitive successes can be supplemented with equalizing this relation. Namely, if there is a lack of effort, acquisition of cognitive knowledge decreases. So, to make the resolving inner cognitive conflict from self-regulated process, cognitive experience and reflections must be apparent through test taking (Anderson, 1998). Active learners can construct reorganizational behavior (Nelson, 1984) when they focus on concept development and deep understanding.

Learning necessitates *producing* rather than *reproducing* knowledge. Therefore, young people should observe, think, question, and test their ideas at the same time. In addition, their ability should be assessed in relation to their valued goals which entail self-evaluation. What to teach should be assessed and measured objectively. Fair and thoughtful approach can force self- evaluative decisions and cognitive strategy when assessing students (Anderson, 1998).

For the purpose of this current study, self-checking and cognitive strategy skills was selected as sub dimension of metacognition because these strategies had been selected an important aspect of metacognition by O'Neil and Brown (1998) and also the development of individual's capacity to think about how they learn through the process by being self-awareness can be reflected with these strategies.

2.3.4. Classification of Affect as Worry and Effort

There are myriad of definitions of affect existed in the literature. Philipp (2007) defines affect as "a disposition or tendency or an emotion or feeling attached to an idea or object" (p. 259). He suggested that affect has three components: *emotions*, *attitudes*, and *beliefs*. Similarly to Philipp's definition, McLeod (1992) also coined one of the major definitions, as combination of range of beliefs, feelings, and moods and those components are placed beyond the scope of cognitive domain. In his review on affect, McLeod addressed *anxiety* as a part of affect. How anxiety arouses addressed in Mandler's study (1989). According to Mandler (1989) an individual deals with a given task with a particular cognitive schema about how he or she plans to complete the task. If the plan does not function as planned his conflict between action and the self-planned cognitive schema creates an emotional response. Anxiety can be listed as the responses constructed as a result of this conflict.

Moreover, other definitions are represented that points out relation with the cognition. For this issue, the definition of affect or affective domain conveys a main message; affective domain is not merely related with cognition, it also involves responses to these cognitive representations. Some of these responses can be listed as

fear, anxiety, happiness, worry (Goldin, 2002). For instance, taken into consideration of the case from McLeod (1992)'s study one student presented with an open-ended mathematics problem. He or she holds a negative perception about how to deal with these sorts of problem such as open ended problem should be solved in a short time period. But, if this student could not solve the task in a given time period he/she is expected, this may lead an anxiety. The same scenario could be considered other way around. If student thinks solving an open-ended problem requires more time, and the solution process goes as expected, this student would not experience negative emotions towards open-ended questions.

In addition to previously discussed definitions of affect and studies related to affect, one important study added some more dimensions to affect studies that deserve more attention. Malmivuori (2001) conducted a dissertation that was mainly deals with theoretical analysis of *affect* concept. Different from other theoretical analysis on affect this study examined the affect with the combination of social beliefs, self-regulation, and metacognition. In her study, she analyzed 600 hundred studies. During her analysis she tried to capture relations among these constructs and at the end of her study she offered a framework that laid out the linkages among these constructs. One of the major quotes could summarize the major essence of her work as follows:

> ...to constitute the theoretical and dynamic linkages between the often applied constructs and educational research results, as well as of the mathematics education research results with affect, that would also apply to and clarify self-regulated learning processes or the dynamic interplay of affect and cognition more generally (p. 299).

Metacognition involves emotional and motivational considerations because learning positive emotions are associated with focus, accomplishment of a task, and overcoming obstacles easily. Effortful activity is the efficiency of executive attention, including ability to inhibit a domain response or activate a sub dominant response to plan or to detect errors (Martinez, 2006). As discussed by Nelson and Leonesio (1988), after an experimental design, objective item difficulty is component

of metacognitive system. Item with lower ease-of-learning (EOLs) with receive more study time than inverse relationships. Besides, motivation is a factor affecting allocation of study time.

Awang-Hashim, O'Neil and Hocevar (2002) took the souls of their research from Bandura's self-efficacy theory over 360 undergraduates in Malaysia. They stated that there is a relation between effort, self-efficacy, and worry. Also there was much focus on difference between state and trait anxiety, and their effects on worry. In the study, trait was perceived as relatively stable tendency of individual and state was defined as temporarily situation specific behavior of individual. They believed that according to anxiety research domain (O'Neil & Abedi, 1992), those who tend to show trait anxiety is likely to exhibit higher level of state worry in high stake tests.

In addition to worry and effort there are other affective constructs--metacognition and self-efficacy (Hong & O'Neil, 2001; O'Neil & Abedi, 1996; O'Neil & Herl, 1998). From the point of theoretical perspective, the research focused on Bandura's attribution theory. According to this theory, people who have ability of access and aware of their failure due to lack of effort tend to participate in challenging tasks and spend much time on a task (Bandura, 86, 93, 97). They can also infer outcomes as expended effort. For the facilitative role of effort in achievement in a state mandated test, it was highlighted that high-self efficacious individuals work longer on a task. On the other hand, those who have negative perception of their capability may choose to spend less effort or become shy away from a task. Individual belief on a task or a test is related with emotional states some of which is interacted with metacognitive knowledge to affect performance on the tasks which are considered generally as cognitively demanding construct. In addition, interestingly this study indicated that worry can be regarded as cognitive process in working memory and connected with performance decrease regardless of an emotional component. The analysis and the discussion of the study indicated that the distinction between state or trait over the concept of effort and worry, it is less utilized. It was inferred and concluded from the research that one of the clear

indicators on the state effort is the high level of trait effort. Because, if the individuals' self-related believes are stable, they become enduring effect on motivation and behavior for the upcoming duties. All in all, test score and success on the exam can be attributed to cognitive variables as well as motivational variables. Therefore, it can be inferred that benefit of one should be evaluated both cognitive and affective aspects.

For the purpose of this current study, worry and effort was selected as sub dimension of affective experiences because these emotions had been selected an important aspect by O'Neil and Brown (1998). Also worry is important for having cognitive relation to affective experiences and effort invested in a task is highly related the affective predictions and success in this task (Jiga-Boy, Toma & Corneille, 2014).

2.4. The appropriateness of MC and OE in large scale assessments from the viewpoint of middle school students, their teachers and academicians

For Bobbitt (1912, as cited in Shepard, 2000), "it was wasteful to teach people things they would never use. So, primary goal of curriculum design was elimination of this waste." (p.96). His principle was that each individual should be educated according to his capabilities. Furthermore, for the fairness, teachers believe that an assessment should be uniformly administered to examinees even if some of them become hesitant to prepare more intensive individualized assessments for only below grade readers (Shepard, 2000). Assessment tools should capture important learning goals and processes. While solving OE, students are able to reason critically, solve complex questions, and apply their knowledge in real world context. Shepard propose that if instructional goals consists of developing students metacognitive abilities, make them practice of academic discipline, foster important disposition and socializing them into discourse; then it should be essential that class routines and corresponding assessments reflect these goals as well. One of the helpful means is to usage of OE as measurement technique.

The assessment should be highly detailed, objective and reflect analytic, impressionistic, and global aspects. Purified assessment from bias, expectation and inconsistent standards, the students become more engaged, motivated individual and dedicated to their own learning (Chen & Martin, 2000). At 20th century large scale assessments can support learning because some assumptions are reflected that individuals have general and specific aptitudes to learn so that this can affect their performance through situations and content areas (Chudowsky & Pellegrino, 2003).

Why MC is so attractive and is addicted to be used in large scale assessments? In fact Sledright's (2008) narrative approach study showed that teachers feel so much ambiguous to force them in order to use MC because of the fact they experienced sense of pressure to cover book's all details which increase and lack of knowledge about which of detail content information will appear on state large scale assessments. MC is easy to administer and inexpensive because of recall of specific events. Students rarely are given opportunity to make claim on significant events and to write essays requiring analysis of certain events. To support the novice ideas and claims with strong, up-to-date arguments and evidence has priority. Nonetheless, teachers tend to give MC and identification of questions to answer. Even a little support on assigning reading and summary of what they have been studying, they can improve little with regard to their abilities of writing verbal arguments and providing reasons with reliable evidence.

Zeidner (1987) had studied on 174 junior high school students in order to compare students' attitudes toward MC and OE. Also, the similar study was replicated with 101 7th and 9th graders. For this purpose, attitude inventory was administered to the learners. The core focus of the result was the participant students showed more favor toward MC than OE. Since, the research concluded that there are three main factors that determine how to choose one item format over another. They are subject matter domain assessed, test constructors or users, and extraneous factors such as guessing or copying. To analyze this issue from different perspective, the students' point of views were also gathered qualitatively. The question about which

particular format students perceive to be more convenient: interest, motivate and, anxiety evoking elicit greater success expectancy? In this perspective, useful source of information is their perspective on subjective qualities of a test. It was suggested that the students' test attitude and nature should be taken into consideration while discussing item formats.

Results from various national and international large scale assessments show that format of assessments affect meaning of test score by restricting nature of content. MC and essay examinations measure somewhat separable constructs (Bridgeman & Morgan, 1996). Certain content and cognitive operations are better measured by a particular item format (Beller & Gafni, 2000). Majority of students think that essay type exams better reflect their knowledge than MC type exams (Anderson, 1987, as cited in Birenbaum & Feldman, 2006; Cai, 1997; Zeidner, 1987). These students prefer construct response instead of choice type due to their high confidence in academic ability. On the contrary, students who have high anxious choose choice-response type like MC format. Since, MC format provides fewer requirements on information processing capacity where it is occupied by worries and test irrelevant thoughts (Hembree, 1988). In addition, MC is preferred because of the fact that being easier, clearer, less complex, less tricky, more interesting, and more fair. O'Neil and Brown (1998) worked on 8th grade children's metacognitive and affective processes which is called "Differential Effects of Question Formats in Math Assessment on Metacognition and Affect" of a large scale mathematics assessment program. It was a three factor mixed model design (Kirk, 1982; as cited in O'Neil & Brown, 1998) and tried to be investigated the effect of format in terms of ethnicity, gender as between-subjects factor and metacognitive and, affective variables as within-subjects repeated measures. In this study, mathematical items in MC and OE formats instructed to the students. It was investigated that MC has greater self-checking than OE due to novelty of OE question type. OE created greater amount of worry on the students than MC. Also OE encouraged more cognitive strategy usage, less self-checking behavior and

greater worry than did MC. However, as a result effects of these factors did not vary according to as a function of gender and ethnicity.

Reich (2011) worked on a qualitative research and document analysis about mandated MC history course exams constructed and applied from 1980 to 2010 years. His aim was to analyze and interpret MC history course exams whether they have been appropriate for official collective memory. This study was a qualitative research design where 263 questions had been read and analyzed, all of which had been organized by decade and analyzed for content. After the application, it was resulted that tests should be seen as secondary to curriculum rather than tendency to educate learners for the testing. It was highlighted that by nature exams had been reductive for interpretation. They should contain significant elements due to its nature rather than only focusing on or searching for narrow epistemology. State-wide history exams should be suited for collective memory than academic history. Main goal was students should be familiar with major interpretations about content and be able to show these kinds of behaviors (Reich, 2011).

In Turkey, there exist two types of assessment systems (Cepni, Ozsevgenc & Gokdere, 2003). The first one is called the local assessment in which teachers administered exams within their own classroom. The second one is called high-stake tests. These high stake tests are administered by Ministry of Education (MEB) and Student Selection and Placement Centre (OSYM).

When the historically goings-on over the examination system in Turkey followed, it was seen that in 1950s the learners could pass to one level higher educational institution with central examinations after primary education before the eight year compulsory education but then thanks to the eight year compulsory education implementation, the eight-grade students had been taken central examinations. As of historical development these practices were called respectively Secondary Schools Entrance Exam until 2006, High School Entrance Examination (OKS) until 2009 and it was named as Level Measurement Exams (SBS) until 2013. However they got changed. As of 2013, TEOG implementation got started and

during this implementation children have been subjected to the exams including Mathematics, Turkish, Sciences and Technology, Foreign Language, Religious Culture and Moral Knowledge and Social Sciences. The exams were taken as three session at a time in two different ways each one lasting 40 minutes. TEOG includes totally MC question format.

In this new TEOG examination, students' performance on local testing also affects their overall score with the effect of performances on high stake tests (MEB, 2013). These high stake tests are composed of multiple-choice questions (MEB, 2013). Although the major aim of these tests to select students through assessing their ability to synthesize, connect, analyze the knowledge being asked, the multiple choice testing remains in sufficient to meet all these criteria (Köğce & Baki, 2009). Although the aim of these existing tests to assess students' knowledge and ability in a meaningful way, the situation seems quite opposite.

Kartal (2013) worked with teacher candidates and asked them their views about these centralized tests. Majority of the teachers stated that these multiple choice testing lead students into memorization rather than real learning. In addition, they stated majority of teachers do not teach what they supposed to teach, instead they teach test techniques. Due to this kind of teaching towards learning strategies of MC testing, Turkey gains low PISA scores (e.g. rank of 44 in math, 43 in science and 41 in reading as stated by 2012 PISA results). This current low performance and incorrect teaching practices in the classrooms leads a common need: this MC based centralized system should be changed. Thus, the question at that point why these systems still exists and heavily based on multiple-choice exams?

2.5.   Summary of Literature Review

The literature was reviewed to provide a conceptual framework on the phenomenon of differential effect of MC and OE in terms of metacognition-cognitive strategy, self-checking- and affect-worry, effort-from the views of students, teachers

and academicians. The literature was started with the theme "Historical Background of MC and OE". In this part, the history of measurement and evaluation, and its important were mentioned globally and in the Turkish context. The reasons of requirement of different measurement strategies were highlighted and why traditional measurement strategies are not satisfied was discussed progress to MC and OE. Secondly, in the theme "Strenght and Weaknesses of MC and OE Question Format", strength and weaknesses of both formats were discussed theoretically and on the research perspective. These formats were distinguished in terms of construct, reliability, validity and objectivity issues. "The Classification of Metacognition and Affect" theme pointed out metacognition, its types such as metacognitive knowledge, experience, skills...etc. Under this title, the relation between metacognition and affect were explained. It was also discussed cognitive strategy, self-checking in ters of theory and giving examples from researches. It was highlighted why the dimensions self-checking and cognitive strategy were selected as a sub construct in the "Classification of Metacognition as Self-checking and Cognitive Strategy". The same pattern was discussed under "Classification of Affect as Worry and Effort" and the reason of selection these two constructs were explained. Finally, in the literature appropriateness of usage of MC or OE in standardized large scale examinations was deliberated and supported from some qualitative or quantitative researches with regard to middle school students, teachers and academicians perspectives.

For the current research, cognitive strategy and self-checking strategies were selected to be examined under the metacognition because of the fact that they are important indicators coming up during question format solution process. Cognitive strategy is a kind of metacognitive skills which implies the person's rereading, rewording or decision of his solution strategy preference…etc. Self-checking should be understood in this study as self-executive control in a task such as checking one's own performance when involving in a task.

Also, the students' worry which implies cognitive concern or anxiety related to performance of failure and effort which implies working hard on task and not giving up for solving the item format should be comprehended with regard to MC and OE

which are superior from each other over different constructs. How participant's perception differ according to affective forecasts over MC and OE large-scale examinations in Turkish education context is analyzed in terms of worry and effort. Worry should be understood as uncontrollable cognitive suffering which can trigger performance decrease whereas effort implies attempt and not giving up in the task to improve the quality of the work. Effort is activated to better cope with the fact when one has invested a lot of energy in a task and more effort spent in the task results in more positive expected emotions.

CHAPTER III

METHODOLOGY

The methodological pattern and the research design process are presented in this chapter. Firstly, the design process of the study includes following elements: the philosophy behind the selected research design and importance of its implement. Secondly, the participants of the research, data sources, data collection instruments, instrument construction procedure are explained. Later, data collection process of the research in relation with the research design is discussed. At last, trustworthiness that is the core framework in any research is explained. In addition, assumptions, delimitations and limitations of the study are presented respectively.

3.1. Research Design

The main purpose of this research is to explore common experiences and views of 8th grade students, teachers' and academicians' while dealing with MC and OE questions in terms of metacognition and affect features. To realize this aim, phenomenological study approach as one of the qualitative research design types was implemented because in this study, perceptions of eight grade students has been invested qualitatively. During a quantitative approach a study focuses on only numbers of the results and its relations. It is equal to appraise a MC or OE question formats. For instance, when a likert type scale is applied to students about question formats, the value of each answers collected from them is equal to each other because of quantitative approach. On the contrary, in this study the quality of each answers is important to reach the interpretation. Especially, the research focused on quality of perceptions and lived experiences of the interviewees to appraise MC and OE. Therefore, phenomenological approach was conducted in the research.

3.1.1. Phenomenological Research

As a research design, phenomenological approach is an action plan for transition from initials of a question to set conclusions about the questions (Yin, 1994). This type of research describes the meanings of shared experiences (Creswell, 1998, 2007). Phenomenological inquiry opens the doors to using a naturalistic approach to inductively and holistically understand human experience in context specific settings. It necessitates direct personal conduct. All in all, the approach was to gather qualitative (narrative) data in holistic inductive design paradigms. According to Merriam (2009) main assumption of phenomenology is to cultivate existing and understand and describe characteristics of this existence is pure phenomenological tendency. Therefore, by doing direct personal conduct with the eight grade students, it was tried to be understood that how they interpret their cognitive strategy and self-checking skills on solution process of MC and OE.

This philosophy comes from inductive logic. In other words, it is believed that all natural things changes constantly over time so that pragmatic ontology instead of one objective reality is come into prominence. In terms of ontology, "nature of reality and existence" on the phenomena is cross examined. For epistemological perspective, "what counts as valid knowledge" is wondered by looking at the intended phenomena from perspectives of different people, and additionally, thru appropriate methodology, principles, and ideas that are utilized by matching the nature of philosophy, approach and strategies, and techniques (Merriam, 2009). In this case, existence of current reality about how eight grade students perceive MC or OE promote cognitive strategy or self-checking skills during large-scale assessment process are invested. To gather valid experience about differential effect of MC and OE phenomena, not only the perceptions of eight grade students but also the perceptions of branch teachers and academicians is collected.

Lincoln and Guba (1990) with the ideas of Kuhn (1962, 1970, 1996) stressed that human being makes sense of their subjective reality and attach meaning to it by

context of their lives. Empathy, reflective reconstruction, interpretation of action of others should be given importance thanks to qualitative studies rather than quantitative one. Bryman (2001) stated on the word of interpretive paradigm that human differs from material world. So, human and matter should be mirrored in the methods of investigation. The researcher becomes interested in quality of a particular activity. In this logic, qualitative research delivers the collection, analysis, and interpretation of comprehensive data to gain insight for particular phenomena. Atkinson, Coffey and Delamont (2001) also indicates that phenomenologists consider meaning of experience and describe the life world to explore behavior, perspective, feeling, experience of people and what lies at the core of their lives. So, the quality of perceptions of the participants is considered by interview and transcriptions. The experiences investigated and interpreted in a conceptual framework by considering the participants' feelings.

The purpose of the phenomenological study approach is to learn what the meaning of phenomena such as observable fact, occurrence, and circumstance can be gathered from group of individual's common perception and perspectives. To reach the end by inferring communality to all of the participants are the key points. In this study shared *metacognitive and affective* experiences of students' on MC and OE questions were deeply examined. As supportive evidence shared experiences of teachers' on how their students' responds MC or OE questions was also utilized and analyzed with respected to constructs: metacognition and affect.

According to Creswell (2007) the main characteristics of phenomenological research can be listed as follows:

• Based on the perspectives of the participants researcher try to capture meaning of the shared experiences.

• Researcher describes the common points of all participants' experience of a particular phenomenon such as anger, worry, grief etc.

- In order to extract the common essence of the shared experiences researcher usually conducts intensive interviews or focus group interview with the participant who directly experience the phenomenon of interest. Then researcher develops descriptions of essence of the shared experiences.

- Due to the nature of experience is complex and hard to detect directly, researcher collects deep data in a time period. (pp. 76-80)

Based on these listed characteristics of phenomenological research, one can conclude that the major aim of this research type is to "reduce individual experiences with a phenomenon to a description of the universal essence" (Creswell, 2007, p. 58; Patton, 2001). Therefore, the major aim of this study is to reduce participants' experiences about MC and OE in large scale assessments into their differential effect with regard to self-checking, cognitive strategy, worry and effort.

In this study hermeneutical phenomenology was employed. Since this type is not only aimed to merely describe essence of shared experiences but also let researchers reflect on and interpret these essential themes (Creswell, 2007). The themes invested under this research were cognitive strategy, self-checking skills of metacognition and, effort and worry aspects of affective dimensions. In this study, data was collected through one to one interview with the participants such as face to face interviews with students, teachers and academicians and, focus group interview with different sample of teachers. These data collection procedures is discussed in the following sections.

3.1.2. Role of the Researcher in Phenomenological Research

As a researcher, asking good questions is important to interpret answers concretely (Gallagher & Aschner, 1963; Vogler, 2005). Since creating clear and accurate questions facilitates the process of inferences based on the answers being collected (Creswell, 2013). Being good listener is also as important as applying good questioning techniques since good listener should not be trapped by their own

ideology and preconceptions. The researchers leave their own philosophy and prejudges aside. The participants' ideas and answers were listened with a neutral perspective. The statements were typed without changing, adding or erasing any sentences or words. In addition adaptive and flexible for new situations are important to be able to behave calm in unexpected situations during interviews or in the environment. This behavior can be seen as opportunities rather than threats. To firm grasp of issues being studied and to behave unbiased by preconceived notions were obeyed as a rule.

The researcher applied the interviews but before that one to one cognitive interview had implemented with an eight grade students, a branch teacher and an academician to be able to ask good questions in order to interpret the answers concretely. The researcher was also behaved as being good listener. The participants were always followed by positive mimics and gestures. Each interview questions followed punctiliously. The researcher tried not to break in their explanation. When the explanation was intense and the researcher realized that the shared experiences include efficient amount of explanation about probe questions, the questions was skipped. The researcher was also a designer of the flow of the study, listener of the interviewee, analyzer and synthesizer of the collected data. Finally, the researcher behaved as reporter of the result.

3.2.   The Participants of The Study

This phenomenological research involved narrative data which provided in depth, detailed information, careful description of phenomena from participants direct quotations, observations, interviews and document analysis to examine the main research questions and its sub parts. For this aim, the sampling was crucial to inquiry the dilemma between OE can be used over MC in Turkish Examination System so that this dilemma can be approximated from different participants' perspectives with regard to two diverse variables. Consequently, purposeful sampling was preferred to select the participants of the study.

For this sampling method, Patton (1990) stated that the participants were selected purposefully. The logic behind the purposeful sampling lied selected information rich cases for the study in depth. Information rich cases explained "one can learn great deal about issues of central importance to the purposeful of the research" (Patton, 1990, p.169). For instance, the purpose of the current research was to give way and turn the light on the dilemma on Turkish Examination System. Therefore, sampling included teachers, academicians who are the core of the system and of course the students that have been affected from the system. In this respect, the participants who experienced the impact from both MC and OE item types were selected. To select information rich cases, participants from both public and primary school eight graders and teachers as the target group considered as data sources. Also, academicians were chosen to make the perspectives wider on the issue. As a result, criterion sampling of purposeful sampling method proposed by Patton (1990) was used overall of the study.

Criteria for participants' selection:

a)   Eight grade students: The students were TEOG candidates and had experienced about both MC and OE question formats. They were from public schools in Istanbul and a private school from Ankara because each different type of school can share different experiences.

b)   Branch teachers: The teachers must be the branches of TEOG examination. Therefore, the branches of selected teachers are mathematics, science, Turkish, English, social science and religious. Because each branch of teacher can approach the phenomena from their own lesson and the experiences were different, too. They were also from both public and private schools. The actual interview process was done with the teachers from public schools in Istanbul whereas focus group interview was done with the ones from private one in Ankara.

c)   Academicians: They were selected from mathematics education, science education, Turkish language education, social sciences, English language education, curriculum and instruction, measurement and evaluation departments in

Education Faculties of three different public universities from Istanbul and Ankara. Since, these departments are reflected on the TEOG/SBS (Passing to high school education from secondary school education/Transition from Primary to Secondary Education Test) and others from educational sciences departments were as important as branch departments. Some academicians were selected from measurement and evaluation, and curriculum and instruction departments because it was important for the framework of current research, the lecturers from these departments shared their experiences more technically than the others.

Although there are several different strategies (Patton, 1990) for purposefully selection of information rich cases, homogeneous sampling strategy was integrated in the methodology. The aim of this sampling technique was to describe experience of some particular subgroup deeply on the difference of MC and OE over metacognition and affective constructs.

Furthermore, focus group interview was conducted to the teachers who participated from a private school in Ankara. Focus group interview typically relies on homogeneous groups (Patton, 1990). The point was that the sampling involves making people come together of similar backgrounds and experiences to participate in a group communication about the total dimensions of target of the study. The figure depicted below summarized the participants. As consistent with Creswell (1998, 2007), 2 to 10 participants are sufficient to reach saturation of knowledge so that 10 participant teachers, 10 students and 6 academicians were selected to interview individually and 6 different participant teachers were taken together in focus group interview.
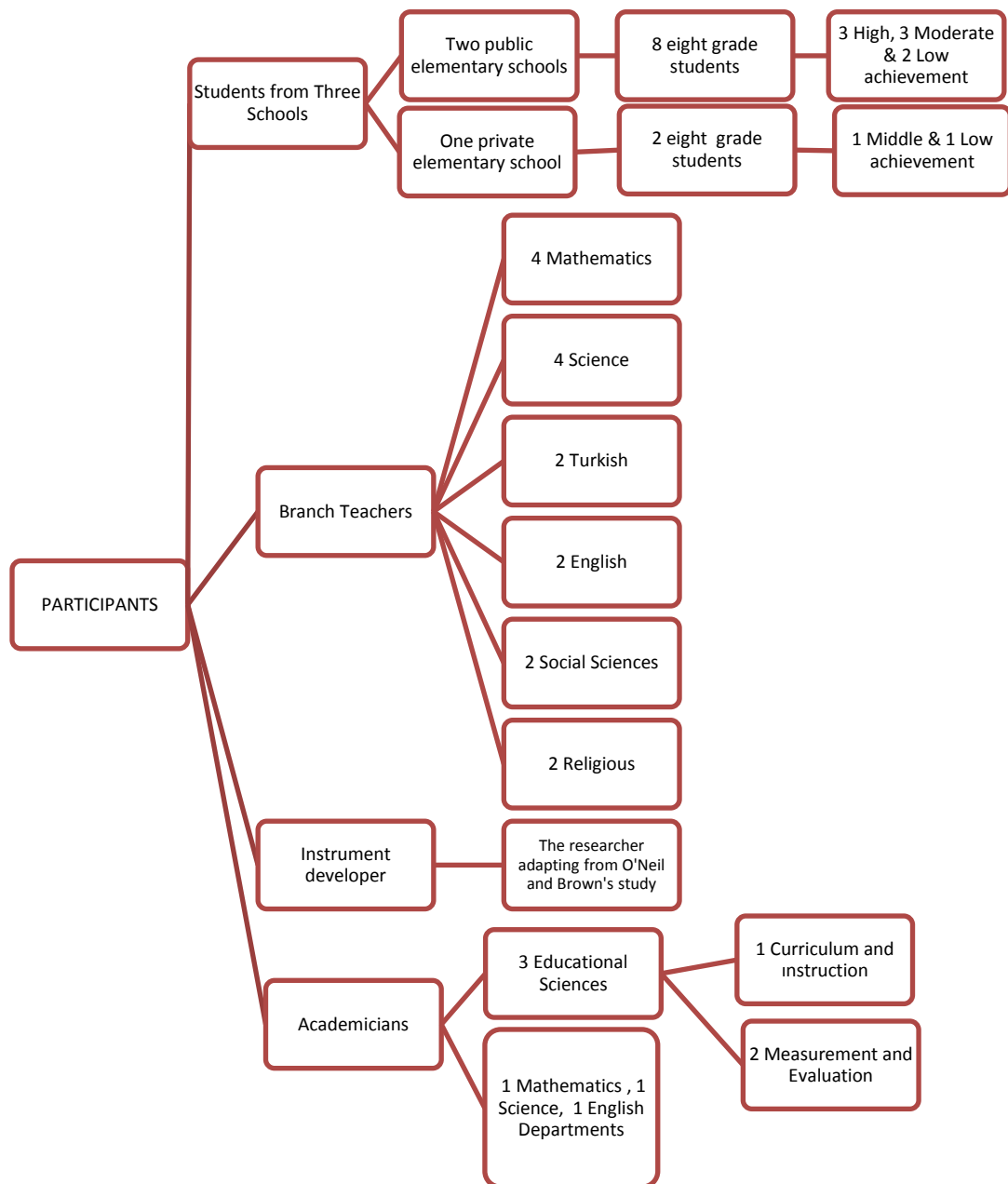
Figure 1. Participants of the Study

3.2.1. Schools

Two public and one private middle school's students participated in the study from Istanbul and Ankara. The reasons behind the school selection were, first this three schools were volunteer to participate the study. Second, both schools were experienced and familiar with both OE and MC in the assessments. The public school which is called Çapa Atatürk Middle School and the private school which is called Nesibe Aydın Middle School were selected as main participants. Then, Şehit Çavuş Selçuk Gürdal Yibo was included to the study.

Çapa Atatürk Middle School became middle part of Çapa Primary School due to 4+4+4 education system in the year of 2013 where the primary one had been one of the pilot Curricular Laboratory Schools ([Müfredatlı Laboratuvar Okulları] MLO) in the history by Ministry of National Education (MoNE) in 1990s. It is located in Fatih district, Istanbul, Turkey; Fatih is one of the biggest towns in Istanbul where many school districts are settled. There are 88 teachers and 1753 students in the school. There are 29 classrooms and 1 science laboratory. Socio economic status (SES) of the school can be described as between middle and high level.

In addition, Nesibe Aydın Private Middle School was established in 1984. It was one of the schools whose founders comes from educational background and established their own books. The school has been highly experienced on MoNE exams and MC questions because its root comes from Aydın Publication where many national school and test books have been published and International Baccalaureate Diploma Program has been begun to be applied since 2014-2015 education semesters. In addition, destination imagination activity is applied in the school in which the group of students tries to solve open ended problems and present their solutions in tournament. The students have a chance to develop life skills on management, cooperation, creativity and critical thinking skills to complete open ended assignments. It is located in Gölbaşı district, Ankara, Turkey. There are approximately 185 teachers and 1480 students in the school. There are 74 classrooms and 3 science laboratories. For 8th graders, pilot tests are applied three times a month.

Socio economic status (SES) of the school can be described as very high level. It was used in this study because it was the first school that accepted to be participant of the study and voluntarily and wistfully school administration and teachers wanted to participate in the research. The school was accustomed to apply OE and MC formats in Turkey.

Şehit Çavuş Selçuk Gürdal Yibo was established in 2007. It was settled by European Union Projects Coordination Leadership and aimed at protecting children who are the ages of primary school level and at risk in Istanbul. The children were schooled as boarding student. The school is settled outside the city proper and located in Arnavutköy district, Istanbul, Turkey. There are 13 teachers and 170 students in the school. There are 8 classrooms and 1 science laboratory. Socio economic status (SES) of the school can be described as low.

3.2.2. Teachers

The criteria for selecting the participant teachers were; 1) experience about the preparation and application of MC and OE, 2) experience about strength and weaknesses of OE and MC, 3) ability in observing their students while students solve questions, 4) branches of TEOG and 5) demonstrate will to participate in the interview.

The teachers from each branch such as Mathematics, Science, English, Social Sciences, Turkish and Religious were participated in the study. Two of them were male and eight of them were female. All of them were public school teachers and their experience years were about 2 to 23 years. Some of them had a strong background of change in examination systems in Turkey and some also had experienced question writing commission by MoNE. All of them was experienced in application of MC and OE during class exams or/and large scale school wide assessments.

One teacher from each branch such as Mathematics, Science, English, Social sciences, Turkish and Religious was participated in the study from Nesibe Aydın Middle School. Two of them were male and four of them were female. These all teachers were come together in a silent atmosphere and joined a focus group interview. All of them were experienced in application of MC and OE during class exams or/and large scale school wide assessments. The demographic information about teachers was shown in the tables below.

Table 1.
Demographic Information of the Teachers in the Middle Schools

ID	Teachers' Branches	Schools	Gender	Year of Experiences
A	Science	Esenler Atatürk	Female	2
B	Mathematics	Kemal Türkler	Female	2
C	Mathematics	Çapa Atatürk	Female	14
D	Mathematics	Akçansa Fatih Sultan Mehmet	Female	13
E	Science	Şehit Hüseyin Güldal	Male	11
F	Science	Çapa Atatürk	Female	23
G	Social sciences	Çapa Atatürk	Female	21
H	English	Çapa Atatürk	Female	11
I	Turkish	Çapa Atatürk	Female	17
J	Religious	Çapa Atatürk	Male	16
K	Mathematics	Nesibe Aydın	Female	8
L	Science	Nesibe Aydın	Male	8
M	Social sciences	Nesibe Aydın	Female	10
N	Turkish	Nesibe Aydın	Female	9
O	English	Nesibe Aydın	Female	12
P	Religious	Nesibe Aydın	Male	21

3.2.3. Students

The students who participated in this study were all eight graders. Because they were more accustomed to expose large-scale assessment and aimed to go into a high school. They had experienced both MC and OE. Also, they had awareness about solving MC and OE. The main indication was that they must have experienced in

MC and OE at least once. In addition, they were selected in terms of having low, middle, and high success in GPA. The students were selected from the classroom of teachers whose detail background was shown in Table 1. The researcher sent permission form (see Appendix B) to the students' parents and also sometimes some parent's permission were recorded vocally. Since, 8th grade students were younger than 18 years. Voluntarily application form (see Appendix C) in which there was summary of the research was shown to children and parents. The students whose parents had given permission joined the study and interviewed with the researcher voluntarily. They could include in the thesis study. In Table 2, they were summarized.

Table 2.
Demographic Information of the Students in the Middle Schools

ID	Schools	Gender	Grade	Academic Success
A	Çapa Atatürk	Male	8	Middle
B	Nesibe Aydın	Male	8	Low
C	Nesibe Aydın	Male	8	High
D	Çapa Atatürk	Female	8	Middle
E	Çapa Atatürk	Female	8	Middle
F	Çapa Atatürk	Female	8	High
G	Çapa Atatürk	Female	8	High
H	Çapa Atatürk	Male	8	Low
I	Şehit Çavuş Selçuk Gürdal Yibo	Male	8	Middle
J	Şehit Çavuş Selçuk Gürdal Yibo	Male	8	Low

3.2.4. Academicians

The academicians whose departmetnts are measurement and evaluation, curriculum and instruction, science education, mathematice education, English language education were participated in this study. One of them was male and the othes were female. All of them were from public universities such as Hacettepe University, Middle East Technical University and Boğaziçi University. All of them had a strong background of change in examination systems in Turkey and especially one of measurement and evaluation academicians had participated to write and

control the questions for large scale examinations. All of them were experienced in application of MC and OE during their class exams. The demographic information about academicians was shown in the tables below.

Table 3.
Demographic Information of the Academicians

ID	Academicians' Departments	University	Gender	Year of Experience
A	Measurement and Evaluation	Hacettepe University	Female	7
B	Measurement and Evaluation	Hacettepe University	Male	4
C	Curriculum and Instruction	Middle East Technical University	Female	10
D	Science Education	Boğaziçi University	Female	6
E	Mathematics Education	Middle East Technical University	Female	8
F	English Language Education	Boğaziçi University	Female	14

3.3. Data Sources

In this part data gathering procedure, interview instruments preparation, instrument developers and expers are discussed.

3.3.1. Data Gathering Procedure with Sources and Instruments

As stated by Patton (1990) there are three kinds of data collection procedure in a qualitative research. They are interviews, observations, and document analysis. Even though the aim was to collect accurate data about the phenomenon from perspectives of people involved in the study, other procedures such as observations and document analysis were not applied to support the findings from one type of data gathering procedure. As a data collection instrument, three interview forms were developed because the perspectives of 8th grade students, teachers as well as academicians were concerned. For each participant group different interview question instruments were prepared because of collecting each participants' their

own unique background and experiences. Dimensions of metacognition and affect which had been the main theme of the study were placed in the interview questions. After the preparation of instrument, the process was also discussed.

3.3.2. Interview Instruments Preparation

Interviews were semi-structured in which the participants answered OE questions prepared by the researcher (see Appendix D, E, F). They analyzed and shared the experiences over metacognition and affective characteristics of students in terms of *cognitive strategy, self-checking, worry, and effort*. There were predetermined questions of these dimensions some of which were repeated in the questions similarly in order to inquiry the construct more than one time. Furthermore, while the participants were explaining their experiences and examples, they are asked to answer other random questions so that their ideas became wider over the subject and sometimes no predetermined ideas were examined.

The interviews with eight grade students were conducted face to face in an informal environment. The interview questions were asked not to disturb the participants while sharing their ideas. Data about how participants think and feel on the dilemma Turkish examination system from the points of self-checking, cognitive strategy, effort and worry in the most direct way were gathered qualitatively.

3.3.3. Instrument Developers

Open-ended interview questions were utilized in the study. The researcher developed the questions. However, dimensions and sub-dimensions pointed out in the interview questions were extracted from O'Neil and Brown's (1998) study. Since they had worked the differential effect of MC and OE questions quantitatively in which the cognitive strategy and self-checking dimension of metacognition, and worry and effort dimension of affective constructs had been determined. The skills and required behaviors had corresponded to these constructs had been described and measured in a Likert type scale.

On the basis of the O'Neil and Brown's (1998) study, the researcher created three separate interview forms. These forms are for eight grade students, teachers, and academicians respectively. Even if the dimensions had been presented before, the researcher controlled whether they are appropriate for that qualitative one. For each construct, at least two questions were written. For instance, constructs inquired were cognitive strategy, self-checking, worry and effort respectively. The students were asked "Can you feel the necessity of controlling the answer while solving MC?" and "How can you check the calculation when solving MC?" through the interview.

3.3.4. Experts

The experts, who participated in this research, helped the researcher to review the draft version of the questions. After the construction of each draft, three experts reviewed the interview question instrument. A graduate student majored in educational sciences from Middle East Technical University in Ankara, a Turkish Language specialist from Middle East Technical University Technopolis and an expert who work in MoNE in the field of measurement and evaluation department checked the appropriateness of questions. First of all, the interview questions were written as common for OE and MC to collect compact answers and keep time and effort. But the graduate student suggested that the questions should be separated for OE and MC so that collecting and analyzing data can be more useful. Also it is suggested that prompt questions should be added to ask the participant in order to make them talk and give more specific answers. The instrument became ready to be used in the research in order to be asked for target participants. Therefore individual questions for OE and MC parts were written through considering for sub-dimensions that means they are similar form but some specific terms were shared in the one intended part of OE or MC. Number of questions were the same.

Second expert was the specialist of Turkish language. She controlled the grammar, terms and flow of the instrument. She corrected the mistakes and

suggested revisions to the researcher. At last a measurement and evaluation expert from MoNE reviewed the questions. She controlled the question forms in terms of reliability, validity, and appropriateness from the point of measurement and evaluation. She suggested omitting some questions because of the fact that they measured and inquired similar experiences.

After the expert opinions, before actual implementation of the instruments, the open ended questions were read out loud by a friend who tried to make sense of meaning of the any item and spot errors instead of finding the mistake by hand. After that, necessary changes were made, grammatical mistakes corrected or some iterant sub questions were modified or erased so that its readability, appropriateness and meaningfulness were checked.

3.4. Data Gathering

In this part the researcher's mission, interview process, pilot study, actual interview process and focus group interview are discussed.

3.4.1. The Researcher's Mission on the Study

The researcher of this study was a prejudice-free interviewer because the participants always encouraged talking both MC and OE. When any interviewee began to talk more about MC, he was also directed to talk about OE with explanation of the researcher. Since in the nature of the phenomenological research the researcher behaved as free from bias. Although this should be the case, Hammersley (2000) stated "a researcher cannot be detached from his own presuppositions and respondents do not pretend otherwise. The researcher holds explicit beliefs" (p. 476). The researcher collected and shared the experience about MC and OE in the same amount including all four dimensions of metacognition and affect. In order to reduce this possibility triangulation was employed. Triangulation of the data will be discussed in data analysis section.

The target was to gather data about MC and OE question formats and their differential effect on metacognition and affective constructs and secondly describe the collected phenomenon by remaining the facts true and narrating them without any pre-given framework. The researcher tried to find the pattern inside thinking of informants.

During the data collection part which will be explained in Chapter 3, one of the researcher's duties was to get informed consent (Bailey, 1996, as cited in Groenewald, 2004; Bricki, 2007) from the interviewees and to give explanation about data gathering process. To arrange the atmosphere in harmony and peaceful to able to collect clear data was another issue. Confidentiality was provided to them to reduce suspicion, nervous of the participants in order to make them promote sincere responses. Also the investigator tried to approach the phenomena from different perspectives and methods for the sake of triangulation.

3.4.2. Interview Process of the Study

In this research, in the process of question asking, research focus was about question types not answers. Through asking appropriate questions researcher tried to capture metacognitive and affective experiences of students and their teachers' views on what their students' experiences when they encounter MC vs OE questions.

In the process of listening, the researcher did not limit to focus on only aural modality but also tried to observe and sense generally. In one section, as between 40-50 minutes, large amount of information as stated by constructs of self-checking, cognitive strategy, worry and effort were collected from one participant. The data were assimilated without bias. During interview moods and affective components were considered. Whatever the participants said, it was aware of some information clues could be laid between lines of sayings. The researcher kept open her mind to gather the information coming from the interviewees. In terms of adaptiveness and flexibility, the term "rigor" in addition to trustworthiness was contemplated. By

eliminating herself being rigidity, the reflection of answers was tried not to overemphasize.

Convergent evidence from witnesses and physical artifacts as well as some unspecified common sense from experience of participants were collected. Mimics and gestures of the participants were observed and collected with whatever they said. Consistency and cohesiveness between behaviours and sayings of the participants were taken into consideration. Being open to contrary finding helped the researcher to avoid lack of bias.

In this study, during the interview process, following issues were considered and realized:

• Interviews time were arranged according to participants schedule and availability

• The participants had right not to follow interview or drop it out

• The researcher gained access to key interviews such as academicians of branches

• Have sufficient resource, PC, paper writing, quite place to voice recording and writing notes were available during the interview

• Researcher made clear schedule of data collection procedures and activities expected to be completed in specified period of time.

The researcher kept on track and served as prompt in asking questions. Major questions were reviewed and the others that distinguish among sub level of questions were addressed. In the pilot test of the instruments the inquiry was much broader whether general framework of the instrument reflected the actual dimensions or not. It was less focused on ultimate data collection plan.

Also cognitive interview was done with an eight grade student who was different from the actual student participants. "Cognitive interviewing" (Willis,

1999) was applied in this pilot study. Cognitive interview help the respondent to reveal the information concealed in the questions. On the mission of development of the material which is interview questions such as MC and OE in this study, it is a technique used to offer insight into pilot learners' perceptions. Verbalization of thoughts and feelings were inquired and observed while examining the information. In this step, there are two types of it such as "think aloud" (Ericsson & Simon, 1990) and "verbal probing". The interview questions about OE and MC were read by the volunteer respondent and the researcher asked what the respondent is thinking about the questions already prepared. Respondent read and talked on that. Their voice was also recorded. Likewise, thanks to verbal probing questions, the volunteer respondent interpreted and paraphrased the questions. After reading loudly, whether or not the questions were representative of the cognitive category were evaluated. The researcher asked whether there was anything difficult to understand, length and technical nature of them was assessed and discussed together. The researcher always encouraged her to provide what she was thinking. Sometimes it was asked "tell me what you are thinking." or non-verbal reinforcements were said as "hmm, ok, I see" in order to show that the researcher was listening her efficiently.

The respondent suggested some paraphrasing on four questions and they were revised. For example, the question of "How can you test your answers during solution?" was suggested to be changed as "How can you check correctness of the answer you provided during solution of MC?" according to self-checking skills. After that, necessary changes were made, grammatical mistakes corrected or some iterant sub questions were modified or erased so that its readability, appropriateness and meaningfulness were checked. Then, the instrument sent and submitted to the researcher's supervisor to take his opinion and criticisms. All in all, the interview instruments of students, teachers and academicians were piloted before implementation in the field.

Pilot was like a theatrical application of the study's theoretical and methodological position. It provided insight to the basic issue. It was judged in terms

of parallel with ongoing review of literature so that fresh set of empirical observation was reached. In addition, logistics of field inquiry was observed and evaluated in the pilot study. Field procedure indicated modification to attempt in next application. Pilot was enough so that it was seen as a good appropriate prototype for final. Totally 4 experts and the researchers' advisor were involved in the revision of the questions to reach the final interview questions.

In this study, focused group interview was conducted with the teachers. Short period of time such as one hour were used in a conversational manner in this interview. The teacher thought aloud about certain facts. Some specific questions were carefully worded. Respondent tried to give a fresh commentary. The teachers talked, discussed and corroborated each other in a conspirational way by echoing their ideas. Every participant had a right to decline the comment. The Appendix E showed the questions utilized in the focus group interview.

3.4.2.1.   Pilot Study

Before beginning of the data gathering method, the researcher searched for the required documents to make an application to the Middle East Technical University Human Research Ethical Commission (METU HREC) so that the necessary permissions can be prepared to conduct this research. Also approval was taken from MoNE (see Appendix A). The required documents were application form, parent acknowledgement form, voluntarily participation form, project knowledge form, and sample interview instrument and application control list.

After the preparation of the instruments, the experts were selected according to their branches. Measurement and evaluation expert working in MoNE, a curriculum and instruction expert from METU, Turkish Language and Literature expert from Boğaziçi University and a Turkish Language specialist from METU Technopolis were selected intentionally. They were contacted via telephone or face to face. Their fields of the study were really important input for the research because of the fact

that draft interview questions be evaluated in terms of different perspectives. All experts accepted the invitation and by face to face interaction, the questions were discussed and assessed. Also the experts gave their suggestions on the written document by correcting the mistakes or changing the questions. Sometimes the researcher made on-site correction on the instruments.

Flexibility was one of the requirements for the qualitative research. Hence, the data collection instruments were formed while interviewing. Since, the questions which can be used to collect an actual concrete data about differential effect of MC and OE under the headings of self-checking, cognitive strategy, worry and effort. Some questions were eliminated because of the fact that in any case the participants provided their answers about these probe questions. Some of them were eliminated by themselves. Hence, the interview questions were rendered more compact and became ready for their final state.

3.4.2.2. Actual Interview Process

After the researcher received their approvals from METU HREC, she started to collect data from the schools, teachers and academicians (see approvals in Appendix G). After sharing the detail of the study and summarizing how the interview will be applied, the teachers wanted to participate willingly. The interviews with the teachers, eight grade middle school students, and academicians were lasted approximately in 45 minutes each between the months of February 2014 and March 2014. At the beginning of the interview, the researcher introduced confidentiality issue assured that the identity will be kept hidden confidential.

The interview instruments were administered to branch teachers of mathematics, science and technology, Turkish, English, social sciences, religious from the public and private middle schools explained in Chapter 3. The researcher used a tape-recorder since all of the interviewees gave permission. In addition to formal interaction, also some informal conversational interviews were conducted

with the participants whenever it was possible thanks to semi-structure interview manner.

The eight grade students seven of whom was selected from Istanbul were interviewed in the same environment with their teachers. Also, the ones who do not have an opportunity to face to face communication with the researcher interviewed via internet. The three students who joined the study from Nesibe Aydın Private Middle School, Ankara were totally met with the researcher by introduced with the administration and guidance and psychological department. They were also selected as low, middle and high academic achievement by the school. These were interviewed in an empty and silent parent-teacher association room provided to the researcher.

Moreover, academicians who had been selected from mathematics education, science education, Turkish language education, social sciences, English language education, curriculum and instruction, measurement and evaluation departments in Education Faculties were generally interviewed in their university. The interviews applied via both face to face and internets were recorded vocally rather than video call. The academicians talked about the issue by collating their academic background knowledge into experiences and perspectives.

3.4.2.3. Focus Group Interview

The teachers who participated in the study from Nesibe Aydın Private Middle School were conducted to focus group interview (Merton, 1956) on the total instrument on the date of February 2014. The main aim in the focus group interview was to bring homogeneous group of people who hear each other's responses to make additional comment on a specific topic. There must be 6 to 8 individual to participate in the interview on the topic (Merton, 1956, 1990). So there were 6 branches of teachers. It was not a discussion. Beyond their original response about experiences

and ideas on MC and OE, they added their comments after hearing other teachers'
views.

3.5. Data Storage Method

Data collected from the participants of the current study was audio recorded
with permission (Arksey & Knight, 1999; Bailey, 1996, as cited in Groenewald,
2004). Each participant's recordings was put into a folder in the computer based
environment and assigned a code such as "Teacher A_31.1.2014". The voice
recordings were read by the researchers and transcribed in word .docx format as soon
as possible after the collection. The researcher transcribed whatever she heard from
the voice recordings under the related questions, and also random statements and
communications throughout conversation flow were written in appropriate line in the
documents, too. All key words, phrases, statements were transcribed. Sometimes
there were buzzing hearings due to internet connection but transcriptions were
written slowly and completed. There was no equipment failure and environment
conditions were well. Setting was as free as possible from background noise and
interruptions.

3.6. Data Analysis of the Study

The overall design of the study was qualitatively constructed. In the study the
interview instruments were developed as qualitative. For this purpose, qualitative
data collection and qualitative data analysis had been continuing throughout the
study. The researcher has an attempt to understand the analysis process thanks to
covering 4 sub-phases: They are overview, reduction, description and classification
assisted by the use of some strategies such as coding, semiotics and narrative
analysis…etc. (Castellan, 2010; Coffey & Atkinson, 1996; Creswell, 1998, 2007;
Denzin & Lincoln, 1994; Dey, 1993; Feldman, 1995; Folkestad, 2008; Gall, Borg &
Gall, 1996; Huberman & Miles, 1994; Reissman; 1993; Tesch, 1990; Wolcott, 1994).

For the triangulation; thick description, research relationship, emic perspective, immersing in the setting, contextualization, and the primacy of data were implemented. Triangulation was utilized to contract and validate data if it yields similar findings from the view of the participants. For this purpose, not only the students' perceptions but also teachers' and academicians' perceptions about MC and OE in terms of metacognition and affect were collected. In this study, the researcher tried to focus on only phenomena; differential effect MC and OE in terms of cognitive strategy, self-checking, worry and effort. Participants' experiences described and interpreted. Description of characteristics and structure of the context under the study (Tesch, 1991) were narrated. Data analysis was not a static one but developmental and dynamic, focus was on the process as well as outcome. The researcher reflected experience, feelings and perceptions of academicians, teachers and 8th grade children on the MC and OE with regard to metacognition and affect instead of imposing a framework of her own which could distort ideas of the participants. Consistent with emic perspective (Harris, 1976), participants were empowered not only react to questions of the researcher but also have a voice and guide the study. Hence, they had a right to say anything come to their mind while answering the interview questions.

Overall research design was qualitatively conducted. In a qualitative study in order to reach "rigor" qualitative inquiry can express crisis of confidence which is lack of certainty of hard numbers as in quantitative studies (Morse, Barrett, Mayan, Olson & Spiers, 2002). As suggested by Strauss and Corbin (1990, 2008) and Yıldırım and Şimşek (2005), qualitative data should be explicate by descriptively and content analysis. So, the researcher followed the main data arguments overall and determined the pre-codes. Content analysis is useful for reaching the concept and categories if not totally determined by descriptive data analysis.

3.6.1. Data Coding

After the transcription of the interviews finished, the researcher read and listened the voice recordings again and determined the pre-codes from collected data. Since some interview questions were prepared according to already existed dimensions such as cognitive strategy, self-checking, worry and effort. Therefore, their pre-existed skills such as whether the students reword the question of MC or OE for cognitive strategy or whether students feel confidence during MC or OE were some of the pre-codes. On the contrary, "type of feelings created" for worry dimension or "solution strategy preferences" for cognitive strategy dimension was invested in this research. In overall study, mostly pre-coded approach was done, however, possible new codes was also invested in the study.

The findings were summarized into a new word document on the basis of interview questions. The data already divided into meaningful parts because of each voice had written under the relevant interview questions. After that, the researcher marked data in line with pre-codes. If extra code was needed from unstructured conversations, the researcher coded data along the lines of whole code list. For instance, memorization, select randomly, rereading to select choice are some of the coding from cognitive strategy skills whereas feel confident, not confident in English, few stress are some of the coding stemmed from the transcription of interviews with regard to worry dimension.

3.6.2. Category Generation

After all transcriptions summarized and codes were determined, the codes from key actors (informants) were reviewed together. Common structures between them were found. Creation of categories via communality was regarded. Similar labels and codes gathered under the same category. Data was systematized by themes. To illustrate "Theme 1: Cognitive Strategy, Theme 2: Self-Checking, Theme 3: Worry, Theme 4: Effort". The categories with their related labels which invested during data analysis are listed below.

Theme1: Cognitive Strategy
- Category 1: Solution strategy preferences
  a. Solving through the way teachers taught
  b. Solving with own constructed way
  c. Solution way: Teacher taught and own constructed
- Category 2: Cognitive strategies employed
- Category 3: Rewording skill to activate cognitive strategy
  a. Rewording
  b. Not rewording
- Category 4: Spending time to understand
  a. Spending time
  b. Spending no time
- Category 5: Students' thinking on meaning of a problem by rereading
  a. Rereading
  b. Not rereading

Theme II: Self-Checking
- Category 1: Checking works
  a. Always
  b. Sometimes
  c. None
- Category 2: Going over choices
  a. Always
  b. None
- Category 3: Judging correctness of solution process
  a. Judging
  b. Not judging
- Category 4: Asking how well doing hand when during solution process
  a. Asking how to do
  b. Not asking how to do
- Category 5: Correcting errors during solution process
  a. Correcting
  b. Not correcting
- Category 6: Asking questions to stay on track
  a. Asking questions
  b. Not asking questions

Theme III: Worry
- Category 1: Type of feelings created
  a. Number of type of feeling
  b. Positive
  c. Negative
- Category 2: Feeling of disappointment and regret
  a. Feeling
  b. Not feeling
- Category 3: Feeling of requirement to study more
  a. Students' feelings: what if studying more

<div align="center">b. Students' feelings: not studying more</div>

Category 4: Happiness caused by question format

<div align="center">a. Students' feelings of unhappiness</div>
<div align="center">b. Students' feelings of happiness</div>

Category 5: Concerns about what if done on the formats

<div align="center">a. Concern about what if done poorly</div>
<div align="center">b. Not concern about what if done poorly</div>

Category 6: Students feeling of confidence

<div align="center">a. Feeling of high confidence</div>
<div align="center">b. Feeling of low confidence</div>

Category 7: Students feeling of comfort

<div align="center">a. Feeling of comfortable</div>
<div align="center">b. Feeling of uncomfortable</div>

Theme IV: Effort

Category 1: Amount of work to be prepared for question format

<div align="center">a. Working hard</div>
<div align="center">b. Not working</div>

Category 2: Keep working to activate effort

<div align="center">a. Keep working</div>
<div align="center">b. Not working</div>

Category 3: Concentration of students

<div align="center">a. Concentration as hard as they can</div>
<div align="center">b. No concentration</div>

Category 4: Students' reflection of total effort

<div align="center">a. Much effort</div>
<div align="center">b. Low effort</div>

Category 5: Not giving up even if the formats are hard

<div align="center">a. Students effort: give up easily</div>
<div align="center">b. Students effort: persistency</div>

3.6.3. Organization and Definition of Data by Codes and Categories

After the definition of data, they put in order to predetermined arrangement by quoting and presenting findings. Also descriptive information in terms of key factors such as how many percent of people afforded that data was committed to writing.

3.6.4. Conclusion Presentation from Findings

The related constructs and novice ideas on differential effect of MC and OE for Turkish Examination System were discussed through findings which had been interpreted in Data Analysis part of Chapter 4.

3.7. Trustworthiness

In order to achieve trustworthiness purposes, credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985) should be taken into consideration whereas Guba and Lincoln (1981) had mentioned the same requirements as credibility, fittingness, auditability and confirmability were regarded.

Generally, whether a research can be replicated or confirmed rely on the strength of its categorization and saturation features. Remain open, using sensitivity and creativity on the study and eliminate the poor ideas and data can be reflected into trustworthiness via the investigator. In this respect, in the qualitative paradigm, the researcher avoid 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; Linton, n.d.). In decision making, the investigator should follow his/her strategies in decision making. To reach this case, the followings should not be ruled out: 1) best representative sample who have knowledge of research and aware of what they do; 2) the method match with the research questions; 3) data gathering and analysis work in harmony as iteratively; 4) novice emerging data should be reconfirmed by a new data with rechecking in terms of micro perspectives; 5) deliberation in which outcome of the research form a template for further developments (Punch, 1998; Temiz, 2010).

In qualitative researches, external and internal reliability with validity should be discussed under the umbrella of validity and reliability. *External reliability* shows

the reader how to generalize and replicate the current study (Yıldırım & Şimşek, 2005) when the same circumstances are satisfied. In this research Chapter 3 was prepared for this purpose. Firstly, the research and interview environment and the process were explained in detail. The participants including different branch teachers in middle school, eight graders and academicians as primary data source were discussed clearly. The researcher's own role was also explained. Data analysis was performed in the light of its conceptual framework. At the last part, data gathering and analysis was explained explicitly. Hence, the external reliability can be discussed in this framework.

Reliability is also important factor for this phenomenological approach. Minimizing error and protecting the study from bias were the necessity of reliability. Documenting the procedure, not making external reviewer suspicious and making many steps as if someone was looking over the researcher's shoulder were the critical aspects in order to satisfy the reliability of the study. If the procedure of the study can be replicated and the researcher arrives at same result, the strong comments can be made about the reliability of the research (Yin, 1994, p. 37).

Moreover, internal validity requires presenting the data descriptively (Yıldırım & Şimşek, 2005). In the study, the data presentation was performed via only interview. There was no observation or document analysis. The data was supported thanks to giving direct quotation in order to avoid interpretation bias. It was tried to support the current result about differential effect of MC and OE for 8th graders by not only interviewing with 8th grade students but also middle school branch teachers and academicians. The results were maintained from three different participants groups to check internal validity due to the fact that observation and document analysis had not been performed. Besides, data analysis part was implemented by more than one researcher. The researcher and the peer performed the pre-coding, coding and categorizing in similar time interval but in different places without seeing their work to avoid affecting each other about self-checking, cognitive strategy,

effort and worry dimensions. Similarly, data analysis was completed in the conceptual framework.

Results were presented in the current study in detail with indirect, direct quotations without interpretation in Chapter 4. Participants and experts also direct the researcher to construct interview questions at the same time by eliminating inappropriate or unnecessary probe questions and shaping others. As well, the actual participants behaved as primary data source and secondary helper. Data gatherings shared with them and read by to be accepted whenever possible through the process of the research. For the period of data analysis, a PhD candidate student from METU worked with the researcher on pre-coding and coding.

For validity, if pattern coincide, the result strengthen its internal validity. All of the individuals' workstations were linked to some network such as there was a shared logic system. For *internal validity*, the researcher should consider correctness of the inference. Yin (1994) stated that several tactics should be used to deal with construct, internal, external and reliability of the study (p.33).

For *construct validity*, operational set of measurement, subjective judgment used to collect data. As in this research, metacognition and affect constructs defined and discussed in detail. In addition the process of developing data collection tool that captures metacognitive and affective measures was discussed previously.

Whether the inference made by the researcher was correct is related with internal validity. Rival explanations and pattern matching between coding of data were considered and used in the study. For *external validity*, it can be emphasized that this study was a kind of qualitative research design so that findings which can be generalized cannot be used due to its general framework of the approach. Qualitative approaches rely on analytical generalizations (p.36). In terms of external validity, replication logic and generalization of a particular set of result were important.

On these purposes, it can be said that the researcher tried to be as flexible as possible. New questions to interview were added during the interview thanks to flow

of the conversation simultaneously. The interview was conducted face to face in natural environment. The situation empowered the researcher to certify validity. Also reporting the data and how results were achieved during research in detail support validity (Yıldırım & Şimşek, 2005). Whenever necessary the researcher can negotiate with the participants. For instance, one student informant asked whether the researcher needed new help or not. Data analysis result was clarified clearly in method Chapter 3 and result part in Chapter 4.

Natural process of the current research pointed at the proof system of the process; what kind of experiences teachers, students and academicians have been on MC and OE item types. So, procedure of current study continued on the way of its rules. The researcher kept step with retaining methodological process by interviewing coherently, enough sampling, dynamic relation between data saturation, sampling, data gathering and analysis without overlooking the theoretical framework. In this study, the theoretical framework was restricted to discuss differential effect of MC and OE in consistent with two sub dimensions of metacognition and affect from the experiences of branch middle school teachers, 8th grade students and academicians. To satisfy comprehensibility, research questions read again and again by four expert reviewers.

Although one of the verification strategies was natural application of the research, the other prominent one was to select the samples appropriately and strategically. In this study, purposeful sampling pointed out that the 8th graders, teachers and academicians were the most beneficial participants of the study in terms of the new measurement system in Turkey. Private and public schools from Istanbul and Ankara helped to saturate data. The study pointed out replication in category, replication in verification, comprehension and completeness (Temiz, 2010). Further, during the process the researcher selected and worked with some teachers in focus group interview to gather comprehensive data about appropriateness of MC and OE in large-scale assessments in Turkey.

Triangulation: the aim of the triangulation is to gain broader range of historical, attitudinal and behavioral issues. Multiple sources of evidence about phenomenon were the means that provides focusing on the intended phenomenon from different angles. On the other hand, the fact that there is multiple measure of the phenomenon can create potential problem with respect to construct validity.

As followed by Denzin's approach (1979), it is stressed that the researcher should collect multiple sources of data in which the term "multiple" corresponds to "triangulation" in qualitative studies. Since the aim is to strengthen research rigor thanks to combination of multiple methods, measures, theories, researchers and perspectives. To look inside the phenomenon from different angles can strength the arguments proposed by the researcher in the study. Denzin explained that;

Data Triangulation: means usage of variety source of data in order to collect information from the participants. For instance, time, space and people are important characteristics of the study.

Theoretical triangulation: means the researcher applies multiple theories or/and perspectives while interpreting the collected data. It is about the related theory the research trusted on.

Investigator triangulation: means more than one researcher investigated the phenomenon under study. Using more than one researcher, multiple observer, interviewer or data analyst are suggested in order to reach qualified analysis.

Analysis triangulation: means for validation and completeness of the purpose

Methodological triangulation: means approaching with multiple methods to study problems under the investigation at research design and data collection.

Moreover, the followings are the main focus of the researchers over triangulation. 1) to enhance trustworthiness of analysis by providing more inclusive and complete narrative. 2) to try to reduce bias and limitation of any individual method by compensating with strength of another method. Also dealing with the bias

help the researcher to construct validity of interpretation of data. 3) to add richness and new perspectives to data collection.

When examining a question, Denzin (1979) supported the use of multiple methods in the research to see many perspectives of the participants. It was asserted that multiple method allow examination of different assumptions, emphasis, priorities, strength and weaknesses in order to reveal different aspects of "reality" under the study.

Patton (1990), on the other hand, indicated by following the steps of Denzin (1979) that data in qualitative studies come from field work and validity and reliability of data depends on methodological skill, sensitivity and integrity of the researcher. Responses are neither standardized nor systematic. Data collection procedures must include in depth open ended interview which necessitates direct quotation from people about their experience, opinions, feelings and knowledge. On this purpose, from time to time pure description, direct quotation such as what people actually say should be emphasized in the study.

Triangulation, however, which is strong evidence of valid, reliable, varied construction of the intended phenomena, was applied partially in this study. The researcher looked at the problem or dilemma from three kinds of perspectives. For example, each group of people; students, teachers and academicians evaluated and delivered their opinion by putting the focus on 8th grade students. The sample questions they answered:

- Student's question: Do you reword while solving an open ended question to understand it better? What kind of strategy do you follow?
- Teachers' question: Do your students reword while solving an open ended question to understand it better? What kind of strategy do they follow?
- Academician's question: "Do the students reword while solving an open ended question to understand it better? Why? What are the benefits of rewording in terms of cognitive or affective?"

The current research applied methodological triangulation by using participants as data source for construction of interview questions. By collecting information from teachers, students and academicians about some MC and OE phenomena and interviewing with similar participants at different time interval between 30.01.2014-16.03.2014, methodological triangulation were considered. Data were not gathered by various methods. Only interview, informal conversation was utilized. On the other hand, no observation and document analysis was performed. However, it is worth to remark that the interview was applied as *cognitive interview* to gather deep understanding and common experiences of the participants rather than a regular one used for recall or loaded question types.

3.8. Delimitations and Limitations of the Study

This study was delimited to differential effect of Mutiple Choice and Open Ended Question formats rather than including other formats such as true/false…etc. More specifically the research focused on these two types of questions formats which are generally used in larges scale assessments. Because the idea of change from MC to OE was a novice issue in Turkey. The literature did not examine the formats in detail in terms of measurement and evaluation sides because of the fact that this study aimed at look into a phenomena qualitatively. Also, participants of the study defined as branch teachers, 8th grade students and academicians. The branches of the teachers were delimited into mathematics, science, Turkish language, English language, social sciences, and religious culture and moral knowledge. The students were selected from 8th grade levels and the academicians could be chosen only from some departmens of educational sciences. In addition, the dimensions wanted to be examined over MC and OE were delimited as worry, effort, self-checking and cognitive strategy from metacognition and affect.

The study has also some limitations because of its qualitative nature which is a feature of research design. The study could not be implemented in all different school settings. The participants were chosen purposefully and therefore it was a threat for external validity. To eliminate researcher bias and risks, the researcher

worked with a doctoral student from primary mathematics education department. Especially, in the data analysis part, codes were checked to eliminate external reliability so that the research could not fall into personal point of view much. The study was conducted in three schools with the eight grade student participants chosen purposefully. To reach trusthworthiness of data were also collected from teachers and academicians. Teachers were from six different schools and academicians were from three different universities. However, it was a qualitative research so that the findings may not be generalized. There may be even a risk to meet external validity. The researcher worked as interviewer, data collector and analyzer. However, in some interviews an observer participated and during analysis of data another expert joined so that the reseacher tried to protect the analysis from bias.

The flow of the study is depicted in Figure 1 in order to describe a schema to the readers.
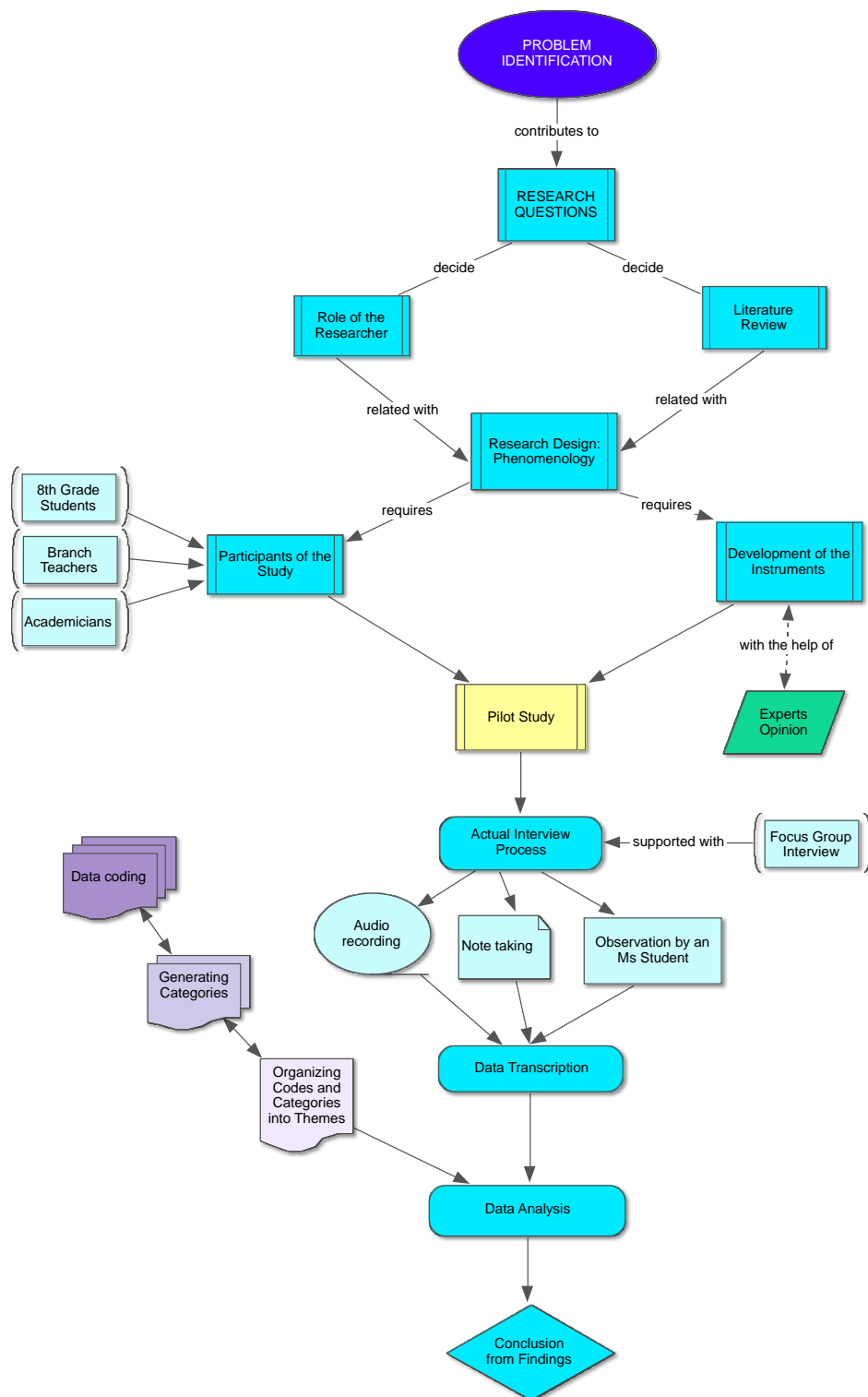
Figure 2. Flow of the Research

CHAPTER IV

RESULTS AND DISCUSSION

In this section, the results from this research is presented and discussed according to findings in support with the similar or dissimilar results from different studies of the related literature. By given attached importance to lived experiences of the participants such as eight grade students, middle school branch teachers, and academicians, the findings are explained under main themes and categories. Due to the fact that this research has taken its core form phenomenological approach, participants' responses seemed more important than who they are and their numbers.

The current research is aimed at to open a perspective to differential effects of MC and OE, their advantages and disadvantages with regard to cognitive strategy, self-checking, worry and effort constructs according to the perspectives of students, teachers and academicians. The main research question investigated was "What are the perceptions about MC and OE related to metacognition and affect for middle school students, according to students', teachers' and academicians' point of views?" It is tried to be highlighted that the instant large scale changes in assessment from MC to OE should be carefully taken into consideration in relation to promote the eight-graders cognitive strategy and self-checking skills and also their affective characteristics such as worry and effort. Since in addition to cognitive, affective aspects has a vital role to activate the children's achievement in large-scale assessments.

Before the results of actual data have been presenting, it can be worth to indicate that consequently there is no difference between female and male students in terms of metacognition and affective outcomes according to the students' perceptions about research results.

The parts below should be followed according to the content including four main themes predominated to this research and 23 categories emerged as

Theme I: Cognitive strategy
    Category 1: Solution strategy preferences
        a. Solving through the way teachers taught
        b. Solving with own constructed way
        c. Solution way: Teacher taught and own constructed
    Category 2: Cognitive strategies employed
    Category 3: Rewording skill to activate cognitive strategy
        a. Rewording
        b. Not rewording
    Category 4: Spending time to understand
        a. Spending time
        b. Spending no time
    Category 5: Students' thinking on meaning of a problem by rereading
        a. Rereading
        b. Not rereading
Theme II: Self-Checking
    Category 1: Checking works
        a. Always
        b. Sometimes
        c. None
    Category 2: Going over choices
        a. Always
        b. None
    Category 3: Judging correctness of solution process
        a. Judging
        b. Not judging
    Category 4: Asking how well doing hand when during solution process
        a. Asking how to do
        b. Not asking how to do
    Category 5: Correcting errors during solution process
        a. Correcting
        b. Not correcting
    Category 6: Asking questions to stay on track
        a. Asking questions
        b. Not asking questions
Theme III: Worry
    Category 1: Type of feelings created
        a. Number of type of feeling
        b. Positive
        c. Negative
    Category 2: Feeling of disappointment and regret

     a. Feeling

     b. Not feeling

Category 3: Feeling of requirement to study more

     a. Students' feelings: what if studying more

     b. Students' feelings: not studying more

Category 4: Happiness caused by question format

     a. Students' feelings of unhappiness

     b. Students' feelings of happiness

Category 5: Concerns about what if done on the formats

     a. Concern about what if done poorly

     b. Not concern about what if done poorly

Category 6: Students feeling of confidence

     a. Feeling of high confidence

     b. Feeling of low confidence

Category 7: Students feeling of comfort

     a. Feeling of comfortable

     b. Feeling of uncomfortable

Theme IV: Effort

 Category 1: Amount of work to be prepared for question format

     a. Working hard

     b. Not working

 Category 2: Keep working to activate effort

     a. Keep working

     b. Not working

 Category 3: Concentration of students

     a. Concentration as hard as they can

     b. No concentration

 Category 4: Students' reflection of total effort

     a. Much effort

     b. Low effort

 Category 5: Not giving up even if the formats are hard

     a. Students effort: give up easily

     b. Students effort: persistency

Main Research Question: Can open-ended questions be a solution to transition to high school in Turkish Exam System? guided for the results and

  In what ways do perceptions differ in relation to MC and OE through different dimensions? What is the difference between MC and OE questions in terms of students' metacognitive dimensions--cognitive strategy and self-checking--and their affective dimensions--such as worry and effort?

were explored through the following sections.

Theme I: Cognitive Strategy

Under this theme, MC and OE are compared for eight grade students' *cognitive strategies* from the point of five categories in accordance with the students, teachers, and academicians' views respectively. Interviews conducted with 10 eight-grade students who had been possible TEOG candidates, 10 branch teachers, and 6 academicians. These interviews were analyzed to find out how they activate their cognitive strategy on MC and OE, which is one of the sub dimensions of metacognitive phenomena. The metacodes inferred from this part were solution strategy preference, cognitive strategies employed, rewording skill to activate cognitive strategy, spending time to understand, and students' thinking on meaning of a problem by rereading.

Category 1. Solution Strategy Preferences

The following, Table 4, gives information about frequency of the category *solution strategy preferences* including discourse from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 4.
Solution strategy preferences

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Solving through the way teachers taught	5	4	5	2	4	4
Solving with own constructed way	3	3	1	5	0	2
Solution way: Teacher taught and own constructed	2	3	0	1	0	0

Solving through the way teachers taught

Table 4 indicates that half of the eight grades preferred using teacher taught solution strategies when they are working on MC questions. For instance, Student G stated, "In math class, after reading all formulas, most questions should be solved in accordance with what formulas tell. However, these questions generally are handled according to what my teachers' suggest." When students' preferred solution strategies on OE questions was examined, the pattern was very similar to MC. Four out of ten students preferred using *teacher taught solution strategies* with regard to OE. One of the exemplar statements for this case 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…

When teachers' views on preferred way of solutions were examined, the results were also parallel with students' responses. Five out of six teachers believed the students tend to use teacher taught solution strategies while solving a MC question. Teacher A mentioned about MC "…Due to the fact that my school does not have a high socio economic status, there are few students taking supporting courses from private institutions. Thus, generally the problem solving logic is maintained in the way I taught." However, only 2 teachers mentioned that for OE questions students would prefer teacher taught strategies.

Examination of academicians' views also supported previously mentioned results with some exceptions. All academicians mentioned that most of the students may have tendency to prefer problem solution strategies they were accustomed to and made them gain by their teachers instead of using or developing their own creative solution ways. For instance, Academician A expressed

These students generally tend to solve in the way the teacher does. If there is a formula, they try to write it down, or if there is a shape they have seen on the board, they try to draw the shape. Indeed, I have not witnessed that they use their own methods….

Four academicians explicitly indicated that children mostly tended to use the solution in a way their teachers had taught before for OE. Academician A said,

Briefly, it is a bit complicated due to our education system. Students are afraid of whether they answer according to teachers' logic and thoughts or not. They limit their creativity in solution and do not consider new alternatives. They care about their grades; they care whether their answer will be consistent with the teacher's expectations.

Belief of academicians contradicts with teachers' to some extent. Since only 2 out of 8 teachers believed that students prefer teacher taught strategies for OE questions. On the other hand, 4 out of 6 academicians stated that eight grade learners prefer the strategies teachers taught. One example statement from Academician E:

It usually changes depending on what is taught in open-ended questions. The teacher tells that students should solve the question the way he taught it. He says that he wants no other way. If a student solves the open-ended question in another way she or he gets no points or credits. Even if the answer is correct he gets no points. If the teacher limits the students in this way students have no other option and they solve the question as the teacher showed them.

Solving with own constructed way

Examining how students' perceived their own strategies on both MC and OE questions shows that only three students preferred using their own constructed specific solution way for MC. Student A, for instance, preferred choosing his own way during exam of MC and expressed the reason as "...I can do with my own way since I better understand through my own [constructed way]. It is more comfortable…."

For OE, three of them preferred using their own specific solution way constructed before or during exam no matter what their teachers' expectations are on the possible solution strategies that are usually taught by teachers. One clear statement of Student H explicitly coined the contradiction and explained his reason:

> I usually do not follow my teacher's paths. In classic questions, I write my own thoughts. I do not use teacher's tips. For instance, in Turkish exam, the question is about finding the main theme of a specific text. Teacher says that main theme is hidden in the last sentence of a text, but I do not only search the last sentence to find the theme. I investigate the whole text, its whole that makes sense. If the whole text is consistent with my idea, I answer accordingly.

In accordance with what mentioned above, a few teachers stated similar opinions about children's use of their own solution way while solving MC. Yet, for OE format, five of them thought the students can take the advantage of using their own solution. They mentioned constructing and utilizing their (students) own solution ways for OE. 5 out of 10 teachers believed that OE triggered the students to consider their own solution way and to construct their unique strategy in answering OE. Here is one example statement of a teacher; Teacher A explained

> ...Open-ended questions are the questions that you want from your students to find their own way. They will find their own method, solve the questions by themselves, investigate the question, understand it and develop the appropriate solution. The open-ended questions are the best way to evaluate students and measure their knowledge, in my opinion….

It can be inferred that the teachers' thoughts were similar to eight graders' thoughts. It is possible to infer that there is a tendency to follow a path teachers presented to their students. Interestingly, students somehow neglect using a strategy of their own way. Most of the teachers believed OE format leads the students develop and use their own solution strategies.

However, none of the academicians shared their idea on whether students utilize own constructed strategy on MC or not. Also, only 2 of them who had presented opinions were agreed with the teachers. These academicians answered that OE format helped the students to construct their own solution strategy while dealing with OE. They believed OE might be more beneficial than MC in terms of allowing the learners to construct their own solution ways. Academician D who expressed the students prefer using their own creative solution during OE examination said

> ...in open-ended questions, they transfer what they know and think. Their knowledge, thoughts, and emotions are directed according to what the question wants to measure. In this sense, children are more creative and, in my opinion, they have more opportunity to create their own solution paths...

Solution way: Teacher taught and own constructed

Responses from the subcategory of *solution way: teacher taught and own constructed* presented in Table 4 indicate that three of the students preferred using both teachers taught and own constructed solution ways for OE questions only two students indicated they would use both strategies when they are presented MC questions. Student B stated: "I have both my own methods and the techniques I learned from my counselor teacher and science teacher while answering. I use both techniques..." Similarly, Teacher B's view also supported this student's perspective

> ...they mostly prefer the way I showed and taught them but I usually try to show more than one way of solving the question in my lessons because some students may have difficulty in understanding one of the ways of solving and may perform with the other way much easier... Students who find their own way of solving are usually those who give importance to their lessons, regularly do their homework and find different ways, and share them with their friends. In short, they can also use their own technique to solve open-ended questions.

All in all, majority of the students tended to use the way what the teachers taught in order not to get low grades. However, they also explained that there is an unconditioned trust to their teachers' expertise. It can be highlighted that half of the participants 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. Finally, it can be concluded that preference of teacher taught strategies decreases in OE according to the interviewee's perceptions because high number of students feel free to write their unique idea and to apply their own solution strategies. The ratio of application of their own solution ways became the same but preference of solving OE both by teachers' ways and own way increased.

In addition to above, focus group interview participants' common points from the experiences showed that the eight-graders prefer mostly their teachers taught solution way for MC and common views of branch teachers for OE indicated the students prefer to use their own solution way even if they had learned from their teachers.

Category 2. Cognitive Strategies Employed

The following table gives the information about frequency of the category *cognitive strategies employed* including foci from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 5.
Cognitive strategies employed

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Note taking	3	3	2	1		1
Elimination	5		2		1	
Calculation	4	1	2			1
Underlining	1	1	3		1	2
Random Selection	2		4	1		
Writing in detail		1		5		
Formula Writing	3				1	1
Keyword writing	2	1			1	
Making inference		1		2	1	
Expression of idea				4		
Mental Calculation	2				1	
Construction or composition				3		
Problem solution				1		2
Resolving		1	1			
Test suitability or logic		1			1	
Shape drawing				1	1	
Race and/or creativity				1		1
Rethinking					1	1
Metacognition					1	1
Falling into distracter	1					
Asking why		1				
Cross checking		1				
Focusing on important words		1				
Repeat orally			1			
Positive or negative suffixes			1			
Trial error			1			
Reading question root			1			
Explanation				1		
Observation				1		
Thinking skill					1	
Construction of cognition					1	
Memorization						1
Reasoning						1
Reflection						1
Knowledge and feeling transfer						1
Using expression and grammar						1

The construction of Table 5 depends on the frequency of the cognitive strategies employed indicated by the participants while solving MC and/or OE. The frequency was categorized in the table after determining the most frequent sayings from common points of students, teachers and academicians. The importance of plot of the categories stems from which cognitive strategy techniques was remarked the most frequently rather than who said it. Totally 36 different categories for cognitive strategy was emerged and 12 of them were common for both MC and OE. However, the categories remarked by the students, the teachers and the academicians prominently were note taking, elimination, calculation, underlining, random selection, writing in detail, formula writing, keyword writing, making inference, expression of idea, construction or composition, problem solution. Therefore, the intense of the categories were depicted at the top of table. However, the reason of some groups being least intense stems from the fact that they are useful only for one question format. Cross checking is required for OE so that the students can be sure about their answers whereas trial error strategy can be used in MC. Also the other reasons of why some strategies were not mentioned mostly derive from not being useful in the question formats, not being taught before or not being appropriate or valid for all content of branches. In addition, a simple question which example is taught in the books could not necessitate a different cognitive strategy. If example of type of a question is rare in the books, so the students can try to reason because any strategy can be learned during an example.

Also data analysis on the kind of strategies the learners develop while solving MC and OE indicated that the students used 9 different thinking strategies while solving MC and 15 different thinking strategies for OE for progression of their cognition. Most of the views pointed out utilization of elimination strategy for MC by indicating

> There are certain aspects of multiple-choice questions. 1-2-3-4 type questions demand us to find correct alternative. There are questions providing a text and demanding to analyze it. Certainly, there are

different methods for these questions. It changes according to students. I have my own different method such as odd one out, choosing between two answers.... [Elimination]

Other strategies used in MC by the learners were calculation, note taking, formula writing, keyword writing, mental calculation, random selection, falling into distracter and underlining. The students explained the strategies by indicating,

"For instance, when you run out of time, you have the opportunity to select an answer randomly..." [random selection], "There are formulas in numerical questions, therefore, I write them down in order not to forget. Then, I check the formulas during exam and I solve the problems accordingly." [formula writing], I also write keywords so that I can list what the question asks. It becomes easier." [keyword writing], "I only make calculations, lists in numerical questions, and take notes. [note taking] In historical or numerical questions, I answer without noting down. In literature questions, I have not accustomed to note taking. I mean, I reply in my mind." [mental calculation], "I am not always sure, but at least I try to be sure by noting down next to the question." [note taking], "When there is a logic, I do it mentally [mental calculation]. If the question needs calculation, I do it next to the question. [calculation]", "For instance, the instruction states "incorrect", I highlight it since I can misinterpret it during the exam. Certainly, I underline it. [underlining] If there is a science question, I take notes next to questions." [note taking], "…It should be controlled step by step, therefore, it is easier to be sure about the question math since if something seems wrong, you can try to find among choices. Even you find the answer, you doubt whether you should check the choices and answers once more in multiple choice questions, but it is not same in open ended questions..." [falling into distracter].

In general, few of the eight graders mentioned that they solve MC when underlining the important word during reading. Other few of them unfortunately fell into distracter during solution. Two of them solved the questions by their mental calculation and two of them selected the choices randomly.

On the contrary, data analysis indicated that the students used 11 different thinking strategies while solving OE about strategy for progression of

their cognition. This result had higher number than MC. Most of the views pointed out utilization of note taking for OE by indicating

It is possible to forget the knowledge, not to remember due to a momentary situation or anxiety during exam and you pass to other questions because in verbal lessons, methods are different from numerical lessons. It blocks you since it is an open-ended question. Then, you think about the answer in your mind. It results in note taking due to continuous remembrance. When you are not sure about the question, you cannot be sure about the answer.

Other strategies used in OE by the learners were underlining, key word writing, calculation, resolving, testing suitability, asking why, crosschecking, writing in detail, making inference and focusing on important words.

The students explained the strategies by sharing

"Particularly in open ended questions, we have the opportunity to try different methods and to test these methods' suitability in examination [testing suitability]. Additionally, I solve the problem step by step after I understand the question root particularly in open ended questions...," "For instance, I focus on the given question. I try to find an answer from there. In numerical lesson, for instance, an equation is given and the solution is developed by focusing on or changing it. It becomes easier to answer if we focus more on such given information." [making inference], "I take notes separately. I use which calculations are needed [calculation]. There are formulas provided by the teacher already. I take my notes according to these formulas." [note taking], "Similarly, choosing knowledge and organize them are the same. One is not more complicated or difficult than the other. Absolutely, it is not in my opinion." [keyword writing and underlining], "...The open ended questions are easier in verbal lessons. Since your teacher will read the answers, you can explain why you respond in that way..." [asking why], "There are posters in my mind. I can write down what comes to my mind with more focus, I mean, by giving more details. I can write more direct, detailed and close answers if I miss the question." [write in detail], "If there are different solution paths, I personally choose the one that reflects most detailed knowledge and then I become sure of the answer by checking several ..." [cross checking].

To summarize, one tenth of them used underlining strategy, one tenth of the students' views key word writing, one tenth do calculation. Some of them supported note taking. These four strategies were also common for MC and OE. Moreover, other uncommon cognitive strategy techniques were

resolving, asking why, crosschecking, writing in detail, writing important words, making inference, organizing knowledge, applying different methods and testing suitability. Some of the student participants showed reading and understanding strategies of questions.

In addition to students, the teachers indicated that 10 strategies were needed to solve MC. They believed that MC required more cognitive performance than what the students thought. These strategies were from most frequent to least; note taking, calculation, elimination, underlining, random selection/random calculation, repeating orally, positive/negative suffix, resolving, trial-error and reading question root. On the frequent one, one of the teachers said "I mean, when the student see the question, if there is a trick in the root, s/he reads the question and its root again. S/he takes notes then answers." [note taking]

Low number of the teachers' views showed that MC made the children organize their knowledge during solution such as "For instance, in a numerical question, I can see the answer under it with calculation, but there are some students who can reach the answer without and calculation."

Furthermore, over the same issue, the teachers explained 11 different strategies of cognition the students used while solving OE. These views were parallel with the learners. Most of the teachers believed that OE necessitated writing in detail, expression of the students' ideas more and construction or composition ability so that the students can develop their cognitive strategy. Note taking and random calculation strategies were the common points with MC and OE according to the teachers' views. In general the teachers who shared their experiences over the cognitive strategy used in OE questions indicated

There is a particular event I have experienced today. We were solving an equation. I first showed my students to calculate inside the parenthesis then move to plus, but one of the students tried to solve outside the parenthesis instead and divide directly. S/he suggested passing as division to the opposite side of the equation. Then s/he found the result and mentioned that that way would be shorter. Yet I was going to teach the way next class, but s/he found on his/her own. I liked it very much. [making inference]

As stated by the academicians who had more positivist view against MC than the teachers, it was highlighted that the learners solved MC by 12 different strategies depicted in Table 5. The academician who believed MC developed metacognition said

If the question is well set, it may be [contributing metacognition]. It is not easy to prepare question selecting and organizing skills of a child in multiple-choice questions. It certainly depends on the content. If you ask a definition, it is more difficult for the child to answer. However, if the definition is asked in a different way regarding not memorizing or asked for an example, the child may need to select and organize, managing cognitive structures again [metacognition]. As I said before, it also depends on the preparer as well.

On the other hand, the academicians stressed that OE forced 13 cognitive strategies. Nearly one fifth of them said that OE triggered metacognitive skills of the students that were parallel view with the teachers. The common strategies with MC were formula writing, underlining, rethinking, and metacognition. For instance, an academician highlighted the metacognitive strategy 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.

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In addition, very few of the students' answers explained that they take notes and used formula writing as a thinking strategy. Some of the youths explained that rather than random selection or going over choices, they focused on calculation after reading question root. Then they chose when they found the result. Hence, this issue pointed out a kind of cognition working. Finally the result indicated that five of them preferred to use elimination method while solving MC. It can be inferred that most of the student participants did not use their cognitive strategy much, which stress metacognition. Some students commented the reason why they eliminated rather than note taking not to distract them while focusing on reading. For instance, Student H:

> No, I do not underline the questions. That is what I do not like. It confuses me. Sometimes, they highlight the questions unintentionally and it makes reading difficult. I directly read the question and focus on a, b, c answers. I do not highlight anywhere else.

Generally, OE may help the students hold their ideas together which was an uncommon skill of MC according to the participants' perspectives. All in all, the students, teachers and academicians experienced that OE could make cognitive strategy work more rather than MC that is a dimension for metacognition. Focus group interview participants' common points from the experiences showed that The children use random selection, guessing mechanically, memorization and solving in mind solution strategies during MC. On the contrary, overall focus group teachers' view indicated that during OE the students could gain more writing skills, composition, creativity and thinking way in which MC does not provide. There is no random success and some meaning questions can create higher order thinking of the learners in verbal lessons. Type of cognitive strategies became wider and they can get rid of difficulty experience of writing questions about daily routines. It meant that the children could have a chance not only to solve an analysis or synthesis questions but also to produce their questions.

Category 3. Rewording Skill to Activate Cognitive Strategy

The following Table 6 gives the information about frequency of the category *rewording skill to activate cognitive strategy* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 6.
Rewording skill to activate cognitive strategy

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Rewording	3	6	1	6	1	5
Not rewording	6	3	9	4	5	1

Rewording

Responses from the students, teachers and academicians indicated that one third of the eight graders reworded the question root or explain the meaning in mind before beginning the solution of MC whereas for OE, two third of the students' responses indicated that the eight graders needed to reword problem root of OE. Most of the students agreed that OE needed more rewording skill. The student who needed rewording of OE question said "In order to solve easily, I extend the question. At least I divide the question to be surer since there is no alternative answer to be sure." (Student I)

Remarkably, the teachers shared their matching ideas with the students. Only one teacher accepted that MC requires more rewording skill than OE. Teacher who proponent of the idea that rewording is required in MC said "They explain, in other words, they repeat what the question asks, what it defines..." However, consisted with the eighth graders, the teachers were also agreed with the students in terms of rewording. Six of the teachers' views agreed that OE required more rewording skill than MC. The common ideas shared by the teachers as in the example "They explain in their own statements

and it is a positive situation for me." (Teacher G) and "It happens sometimes. I come across from time to time. They do it mentally." (Teacher H).

What the student and the teachers explained, the academicians also said same things. Academicians highlighted and agreed with them that one sixth of them believed that MC needed rewording. In addition, academicians highlighted and agreed with the students that all of them except one believed that OE needed more rewording in order to be solved and understood by the children but the one argued that aforementioned views and expressed that OE format did not help the children to reword the question in order to grasp the meaning. Academician shared his/her idea as "I think, open ended questions may be clear or not. Students may think what the teacher asks." (Academician F)

> I think that child's explanation in different paths such as reading text questions, reading comprehensions, re-defining the text, asking in different languages will show that the child will have such competencies for future. Otherwise, they immediately start to memorize. I mean they try to receive what they are exposed to. (Academician C)

It is clear that most of the participants, triangulated with two different expert views, met with a common point that MC does not help the eighth graders to develop their rewording ability, which is one of the important aspects of cognitive strategy dimension of metacognition.

Not rewording

On the contrary, data analysis over *no rewording* subcategory depicted that the two third of the students did not reword the questions. It can be understood that most of the children except three did not need to reword the given in the question root so that they were deprived of rewording which is a metacognitive skill. MC did not force them to develop rearticulate the meaning of problem stated in question root. According to Student F,

> Reading the question one is enough actually. If they cannot get the point, I read the questions once again and pass to other questions. I do not stuck

with questions. I pass... the questions do not include complex meanings. Sometimes there are tricky words and alternatives, but if you have enough information, you answer correctly.

Also another student added, "Sometimes, I read more than once. I read again... the question seems so long and it becomes easier when I summarize briefly." (Student I)

In terms of OE, one third of the students did not reword the questions of OE. It can be inference that most of the children necessitated rewording which is a metacognitive skill during solution process of OE. OE forced them to develop grasping the meaning of problem. OE showed more requirement of rewording than MC that is important skill for cognitive strategy of metacognition. According to a student who said not to reword during OE

I do not define again. If I do not understand a question, I try to understand. I focus on more." and added, "I think re-defining exists in multiple choice questions more. For instance, when I do not understand the solution or given answers, I try to re-define the question root and the answer is shaped accordingly. However, in multiple questions we can move from the real answer when we do it mentally and briefly. (Student H)

Teachers were also agreed with the students in terms of rewording. Many of them indicated that the eight graders did not need to reword to understand the MC question better. However, two fifth of them indicated that the eight graders did not need to reword to understand the OE question better. On this issue, Teacher D said

If they re-define in multiple-choice questions, they will reach the answers easily. They have difficulties since they do not re-define. Only three or four students do it in a thirty-student classroom. Other read the questions directly and selects an answer with a solution or a hazard guess. If they solve similar problems, they solve, but if they see such a question for the first time, they stuck.

Likewise, all of academicians except one argued that MC format did not help the children to reword the question in order to grasp the meaning by mentioning of Academician B "I mean, when student tries to understand the

question, repetition...I have never witnessed. I mean I have never experienced in class. In other words, I have never experienced students think that the question root states this, therefore, it is like this..." With regard to OE, only one academician said OE did not necessitate rewording. These findings were matching with together. In general, most of the participants indicated requirement of no rewording feature of MC was higher than OE.

All in all, it can be inferred that most of the participants, triangulated with both teachers and the academicians, shared his experience with a common point that OE may activate cognitive strategy of children more than MC. It can help the eighth graders to develop their rewording ability, which is one of the important aspects of metacognition. According to focus group teachers' perspectives MC may not provide rewording.

Category 4. Spending Time to Understand

The following Table 7 gives the information about frequency of the category *spending time to understand* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 7.
Spending Time to Understand

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Spending time	2	7	2	9	3	6
Spending no time	8	2	8	1	3	0

Spending time

Spending time to understand implied whether MC forced the students to spend more time on comprehension of meaning of the question root or choices than OE. One fifth of the students stated that MC was needed to spent more

time in order to understand the given in the question root or choices. On the former issue, Student F mentioned:

> No, it does not consume much time. I mean not so much. If you are lack of information, you can stay between two choices. In such cases, you can lose time. However, you need to pass other questions not to waste time on one question and it is important not to be busy with a specific question. I do not lose time since I do not stuck with questions. I return the questions I cannot answer after I complete the exam. I feel comfortable as I think that I have completed all questions.

The participants also evaluated OE format in terms of whether or not it required spending more time to understand. Seven of the students stated that OE was needed to spend more time to understand. Rather than just skim and scan, OE necessitated the children to grasp the meaning of problem root. This ratio was more than MC. It meant that OE could make their cognitive strategy work in this skill. Student I highlighted it as "I mean, I sometimes doubt if the answer is right since there is no presented answer. I think checking it once or twice and it take longer." and Student G as

> …some of the questions are easy some are difficult. Besides, you have to write all methods in open ended questions so that you lose time. However, it is also an opportunity since we need to write the question again, it becomes easier to understand the question. Yet, in long statements, we lose time.

Teachers were also exactly the same idea about whether or not the students spent more time over MC to understand. Only one fifth of them thought that the children strived for grasping meaning of the question. For instance, this view shared by a teacher as "I think they have difficulty in understanding question root. Particularly, they miss negative statements. They have attention problem. They do not pay attention. They comprehend the negative statement as a positive statement." (Teacher E)

Similarly, all of the branch teachers except one agreed the students should spend time to grasp the meaning of OE. Hence, they can actuate their

metacognitive skills by elaborating the problem part or solution strategy. A teacher stated

> They are afraid of open-ended questions. When they do not remember a word, they cannot recall the rest and they lose time...The first problem is to understand the question, in my opinion. Certainly they lose time while deciding which path they should follow, but I do not agree that it is loss of time. The real time loss occurs while understanding what the question asks for. The skill belongs to the teacher in terms of asking a clear question, of course. However, students find these questions tricky by not believing that their teacher cannot ask such an easy question. I know it from their reactions in class. We have problem to understand the question. (Teacher F).

In addition half of the academicians expressed that MC format let the eighth graders spend much time and look at again and again. All of the academicians were also dominantly thought as others about spending time issue. All of them emphasized that OE necessitates spending much time to become understandable by the children because OE is seen as more difficult to be grasped than MC. It can be provided that the eight graders operated their cognitive strategy more thanks to spending more time over OE during solution process. For instance, one of the matching views with the students and the teachers that compared OE and MC in terms of spending time by Academician E was

> I have an opinion that they do not work hard on multiple-choice questions. It depends on the question type. I explain in these limits. If the questions are similar to ones with test books, they spend less time to answer. However, they should present everything in open-ended questions. We grade according to the answer in multiple-choice exams. If there is not any statement as showing how they reach the answer, we directly mark. Thus, the child cannot present what they think or how they calculate while answering. They may calculate in their mind and complete with two calculations. However, in open-ended questions, they need to show four operations. They need to write in unity and explain the underlying logic; therefore, they spend much time.

Spending no time

Nevertheless, according to the frequency of the category *spending no time* from each interview participants, four fifth of the students mentioned MC were easy to understand so that they did not necessitate forcing themselves to grasp the meaning of the question. MC was thought as clear to understand, they tried to skim and scan and then solve easily. On this tendency, for instance, Student D said

> For instance I can stick in two choices in math exams. I can eliminate two of them, but other two remain. Sometimes the questions are easy and I can answer them quickly. I have difficulty in hard ones. I leave them to answer later. The choices make me lose time. In some questions they give an operation and ask a question related to it. I have to make the operation again find the answer. I can make mistakes during process and lose points. I usually miss.

For OE, very few of them, only two, expressed that they did not need to spend much time to understand the question of OE by saying "If you know the answer you can solve in equal time with multiple choice questions. You should only write it down, no other difference. You cannot check the answer from the choices so that you want to think about the result more..." (Student F)

All of the teachers except two thought that the students do not need to spend much time on question root or choices to understand it. They can easily understand and begin to solve. In fact, most of them, four fifth, believed that the students spend few time and they can be understandable at first glance. In an equivalent opinion, only one teacher indicated spending much time did not necessary for OE. On this issue, most of the teachers expressed as

> The choices are clear. The student can immediately see. In English questions, there are no demanding questions actually. They can quickly answer. They are successful in it. They are relaxed in multiple-choice exams. They are not successful in open-ended ones. There is no problem in multiple choices and SBS is not demanding. (Teacher H)

Half of the academicians explained corresponding opinion that the children did not need much time to focus on the question of MC. Also any academician mentioned about the same category in terms of OE. It can be

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deduced MC activated the eighth grade students' cognitive strategy on this dimension less than OE. For instance an academician shared his idea on the fact that MC does not need much time to understand

> I think they are easy to answer. They can cover many topics in short time. You cannot cover many topics in open-ended questions or receive answers. However, in multiple-choice questions, from our perspective, we can check phonetics, varied vocabulary, grammar…. (Academician F)

An interesting view explained by an academician was worth to share:

> My point is different from the statements as open ended questions result in time loss in general, multiple choice questions help to save time, and rather I believe that open ended questions should be used for short answers or with multiple choice items, true-false items which cannot be measured effectively if they are quick answers. They should be used for upper skills and complex abilities such research skills, reporting skills, problem solving skills. If we want to measure a more complex skill, we will include more complex task in open-ended questions. Open ended with three-five items questions can be difficult. An open ended with a single item can take weeks. Therefore, on which one do students spend much time? Certainly, if the open-ended questions are used purposefully for upper and complex skills, it will take much time to fulfill these items. However, I do not like when it paraphrased as a generalization that multiple choice questions are answered quickly, open-ended questions are difficult to answer. (Academician B)

In addition to above, perspectives from focus group interview indicated during solution of OE the students may have a chance to spend more time to understand the questions.

Category 5. Students' Thinking on Meaning of a Problem by Rereading

The following Table 8 gives the information about frequency of the category *rereading* to think meaning of question from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 8.
Thinking on Meaning of a Problem by Rereading

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Rereading	9	9	6	5	2	3
Not rereading	1	1	4	2	4	3

Rereading

Rereading was also another skill under the cognitive strategy to manipulate metacognition. By rereading the participants tried to think the meaning of the question again and examine core meaning under the problem before jumping into choice election. All of the students apart from one of them explained they reread the question root before solving them. It meant that MC question format necessitated their reread skill for understanding deeply. Student D expressed;

> First I read the question then the choices. If I do not understand I read again and I repeat inside. I explain it to myself since teachers say that they will take our papers if we make any noise. Or they warn us not to write anything to anywhere due to cheating.

Student G added to support aforementioned view as "It happens usually in Turkish or other verbal lessons since there are reading texts. When I do not understand a point, I read again, then I can understand." and also Student H said that "If there is a text, I usually read the text most. Or I focus on the part where the question is derived from."

Surprisingly, all of the students excepting one also explained they reread the question before beginning solution of an OE question. The teachers who followed the students' view tendency accepted MC required more rereading skill during analysis of problem root or choices. Three fifth of their point of views indicated that the eight graders think meaning of the problem root given or choices more by rereading it than that of OE. For instance, a teacher explained, "I think they usually read, I mean, as far as I observe. They

start to solve the question, but when they are stuck, they go back to question again." (Teacher B) but some highlighted teachers' warnings on this skill as "Now, I warn them not to submit their papers without controlling and they obey…" (Teacher G)

Likewise, the teachers who followed the students' view tendency accepted that OE required more rereading skill during solution process. Five seventh of their point of views indicated that the eight graders think meaning of the problem given or solution way decision more by rereading it than that of MC. For instance, Teacher F expressed

> I think they do. They are better than they do in multiple choices. I do not know which method they use exactly, but they repeatedly read to understand what is asked. Then they read the question again when they answer. I mean I have observed that they think over and over again on the same question. They do not automatically answer as they do in multiple choices. I think they try to be very careful since they want to convey their knowledge.

Interestingly, one third of the academicians did not think as similar as the students and teachers. Only two points of views tended to indicate MC has an advantage that help the student think more by letting them reread. Also, for OE half of the academicians thought nearly as similar as the students and teachers. Half of them accepted OE necessitated more rereading skill by indicating

> This also depends on the student. Some repeats inside some repeats outside. I have seen students murmuring in exams. They read and read. Some underlines the important points according to them. It depends also on the strategy they develop. (Academician D)

Not rereading

As consistent with the participants' views over the subcategory of requirement of *not rereading,* only one of the students expressed not to do rereading during OE solution. It was stressed that OE question format necessitated their reread skill for understanding deeply. However, this frequency was exactly similar to MC under the cognitive strategy to activate

metacognition. Student G expressed her view as "For instance, if I do not understand the question I read again since I cannot answer without understanding…"

On the other hand, only one tenth of the learners did not read again after the first read and skim of the question root of a MC. It meant that few of them did not need to focus on question root. The more reread the students, the more activate their cognitive strategy, which is related with metacognition.

> Student B mentioned 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.

For OE, only one student indicated that they did not feel required to re-read the problem root and the teachers remarked different ideas than the learners. Most of the teachers, nearly two-fifths, mentioned MC did not require to be read by the learners whereas two-sevenths of them said for OE. Most of the teachers tended to select MC for this aspect.

> …I assume they do not read. They try to answer after they read. For instance, one or two students cannot answer the question, they focus on that question. Even some says that they cannot answer specific question. They do not the answer and try to recall the information, but in order not to leave it blank, they make a hazard guess.

Academicians were also indicated equivalent ideas with the teachers. Two thirds of the academicians stressed that MC is so easy and clear that does not require rereading whereas half of them believed the youths did not require thinking on meaning of given OE problem again by rereading it. For instance, Academician highlighted as "When the instructions are well stated, students do not need to read over and over again, I believe."

Totally, it can be remarked that there was a trend on this issue, which was on the side of positive answer for MC. The students could grasp the

meaning of a problem by rereading in a MC format. Hence, cognitive strategy can be strong in terms of rereading and rethinking skill thanks to MC. It can be concluded that these views brought prejudice and stereotyped beliefs on MC that MC may trigger memorization every time. On the contrary, interestingly, focus group interview perspectives stated during OE the students may reread the question root more than they do during MC.

It can be remarked that the tendency on this issue was on the side of OE. There was a trend on this issue that was on the side of OE. The students could grasp the meaning of a problem by rereading in an OE format. Hence, they can have an opportunity to activate their cognitive strategy. All in all, the tendency and the frequency of point of views of participants were higher over OE than MC in terms of triggering rereading skill.

Theme II: Self-Checking

Under this theme, MC and OE will be compared on how to support the eighth grade students' self-checking ability from the point of six categories according to the students, teachers and academicians perspectives respectively.

Interviews were conducted with 10 eight-grade students who had been possible TEOG candidates, 10 branch teachers and 6 academicians to find out how much they can use their self-checking strategy on MC which is one of the sub dimensions of metacognitive phenomena. The possible metacodes inferenced from this research were checking works, going over choices, judging correctness of solution process, asking how well doing and when during solution process, correcting errors during solution process and asking questions to stay on track.

Category 1. Checking works

The following table gives the information about frequency of the category *checking the solution* including discourse from each interview participants. The frequencies in the table points out the number of categories

stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 9.
Checking works

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Always	4	8	3	7	4	5
Sometimes	5	1	1	1	1	1
None	1	1	6	2	1	0

Always

Responses from *checking* subcategory indicated that two fifth of eight graders who had been interviewed checked the calculations or solutions as self-regulative purpose when they handle with MC. Student J who accepted doing checking said "During solution, I do. Then I check the question again. Then I pass to the other questions. I progress like this." but four fifth of them who had been interviewed checked the calculations or solutions as self-regulative purpose when they handle with OE by indicating

> 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)

Most of the teachers experienced that the students do not check their calculation on MC according to similar patterns of the learners' views. Only three tenth of the branch teachers explained that the children tended to check their calculation by saying "They try to check if they have time left. After they go through with the answers, they may be sure... they may not be sure, they can miss a point. They race with time so that they check." and seven tenth of the teachers experienced that the students checked their calculation and writing on OE. Teacher D, who thought the children felt obliged to check their calculations as a self-checking behavior, and commented, "Because they can be

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stuck with the question since they cannot see an answer. I mean, since they do not see a choice, they doubt their answer. If they see an option, they select immediately. Maybe, they feel more secure." The academicians expressed similar opinions with the teachers and the students. Academician B who believed MC provides more checking behavior

> "Controlling the operations is specific for mathematical calculations, I do not think that they control in other exams. Particularly, in multiple-choice questions, it may be possible to go back and control the answers, may be even easier. In open-ended question, there are not many questions and the answers are the products of the students themselves. Therefore it may be more time consuming to check these questions but I think they are suitable for the skill that is aimed to be measured, not the format of the question type." (Academician B)

Two third of the academicians supported MC make the students check their calculation of solution way. For OE, five sixth of them supported OE format make the students check their calculation of solution way

> ...In multiple-choice questions, students need to check whether they make an operation mistake or a common mistake. In open-ended questions, they have concerns about whether they present what is required in the question, even in math, they search the answer, and they present the steps orderly and correctly. Therefore, more attention is necessary.

Sometimes

On the contrary, views from *checking sometimes* subcategory pointed out the common perceptions of the participant who thought the students have been checking their work rarely during solution of MC or OE questions.

Half of the learners stressed that they sometimes (rarely) needed to check the calculation of MC. Student I who needed to check rarely said, "I do not control the operation all the time. Sometimes I cannot be sure about the question and I cannot understand some points, for instance triangles in math." and only one view of the learners mentioned OE needed checking rarely. In this perspective, however, very few of the branch teachers stressed that they sometimes (rarely) needed to check their calculation, writing or drawing of OE.

Their views on MC were much related. In addition, the academicians showed similar pattern of experiences with the teachers instead of the students. One of them indicated "…In real life exams, there are many aspects. For instance, time issue. Students know that they should control their answers, but they say that they do not have time left. If you give them enough time, they may control, we cannot know...." However, one tenth of them stressed that they sometimes (rarely) needed to check their calculation, writing or drawing of OE.

None

Finally, views from *no checking* subcategory, one tenth of the eight graders did no control calculation of solution. Student E who mentioned not to need self-checking said "I directly make circle the answers that I am not sure about in math." Only one of whom shared experiences on any checking behavior both for MC and OE. One tenth of them did no control calculation of solution. For OE, only two views of the branch teachers explained that the children did not tend to check their problem solution way. For instance, Student F explained as

> In multiple choices, you can be sure by eliminating, but in open-ended questions it is impossible since all in all it is your thought as an answer. Whatever you do, you feel sure. For instance, you make an operation and you do not think that you should review.

Teacher B, who thought the children do not necessitate checking their calculations under the heading of self-checking behavior, shared "If their results are not in the choices, then they review their operation. If they see their answers in choices, they directly circle and they do not check. I think they think that they solve the question and the answer is there. They do not go into details concerning whether the answer is correct or not." The academicians' views were near to students instead of the teachers. One view of them expressed MC did not necessitate checking by saying "No, they do not pass through choices. They do not think why the answer is not D or C, but A. They

directly circle...” Unexpectedly, any academician remarked on the idea of OE did not require checking and controlling.

Category 2. Going over choices

The following table gives the information about frequency of the category *going over choices* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 10.
Going over choices

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Always	10	8	5	6	4	5
None	0	2	5	4	2	1

Always

Going over answer pointed out in which part of MC had been controlled by the students and what kind of control mechanism was used. The results indicated that six of the students controlled the question root, six of them resolved the calculation, two of them checked the calculation by just scanning their eyes, two of them checked the choices, one of the children calculated the proof of the solution to check the current result and one of them spoke with themselves while solving of a MC. Finally the results showed that one of them tried to think better to go over their answer so that they could be sure about this self-regulative process. Student A answered how to control their performance in MC “I make the operation on paper. After I finish my exam, I check my operation and the choices. If it is true, I accept it as true.”

Student B said over checking of question root

> I keep the question paragraph in mind, I mean what is asked. I re-read the question root again to check if I read something incorrectly since the thing you read can change the whole question. I re-read the question root to be sure about what is asked from me for answer in order not to be wrong.

Student J added how to check by focusing on proof "According to the given information in the question, I solve by myself by proving."

Some learners also noted the evaluation of OE. According to OE in terms of going over answer skill, the results indicated that all of the students except two controlled the question situation. The reasons behind why they need to read or solve the solution part of OE were writing truly, few possibility of getting true, losing any point, not forgetting calculation and sure about the method. One of them specified,

> Our teachers want all questions to be answered correctly. Although you reach the answer, if your steps are incorrect, you can lose points. Teachers are more concerned with the steps. Therefore, I need to make the operations. I continuously repeat and try to find whether the answer is correct, my operations are correct.

Discretely, branch teachers gave related notions about this sub category. Teachers' opinions indicated that half of the branch instructors observed the eighth grade students went over their answers once more in a MC by resolving or calculation control. MC created a kind of tendency to make them go over their answer before skipping another question. One tenth of views indicated the children did calculation control or resolving. One tenth highlighted the reason due to chance factor, responsibility to family, race and one of them stressed the youths went over their solutions when handling with composition question on MC.

For example, a teacher shared her idea over composition questions of MC "In paragraph questions, yes, but in grammar questions, it is clearer. In

commentary questions, there are 'maybe's, but in grammar questions, it is clear. It does not change."

Likewise, teachers' opinions indicated that three fifth of them remarked the eighth grade students went over their solution step over OE by resolving, checking steps or calculation control. Teachers explained also another method how to go over OE as testing logic, checking sentences and wording. They were different skills than that of MC because the statement from Teacher D indicated resolving thanks to

> Because they can be stuck with the question since they cannot see an answer. I mean, since they do not see a choice, they doubt their answer. If they see an option, they select immediately. Maybe, they feel more secure. [checking steps]

On this category, the academicians shared corresponding notions two third of the academicians agreed MC required students' self-checking by going over the question root or choices on MC. Similarly, the academicians agreed with the teachers and the students on going over the answer category of self-checking theme. Five of the academicians mentioned OE required students' self-checking by going over the own explanations. They shared the students can be aware of their own thinking, crosscheck, look at explanations, control objective and inputs and check their construction. The academicians according to their background and field arranged the reasons. On the former, Teacher D pointed out "The self-evaluation helps re-thinking so that it may prevent the answer from being given without thinking or superficial..."

The latter was depicted by an academician as

> I think they need there more since I said they shape on their own and they have to follow every step whether they come to the right point. Actually I consider it as math; it can change according to the question. They start to make the operation and they think whether they are on the right track.

None

In addition to going over subcategory, the participants' answers emerged another category called *not going over choices*. One fifth of the participant students did not go over the answer of OE. Student D answered "I think that I make for sure in easy questions. (Laughing) I do not need."

It can be stressed that half of the teachers remarked the children did not need to go over answer on MC and they just skim the question. Two fifth of teacher, on the other hand, shared OE did not require the eighth graders to go over their solution step. Totally it can be inference that most of the teachers experienced the students should read solution ways and follow the steps. So, the students may do self-checking with this skill. Teacher E analyzed and experienced that "I ask why s/he multiplies two and five. S/he replies as to find the answer. The main concern is to find the result…."

One third of them remarked MC did not necessitate going over skill as a self-checking strategy. The academicians indicated that the students control the calculation, do proofing, resolving. They also mentioned the reasons of why the students need going over answer as thinking better, mental process and not to fall into distracter. Academician F

> Mechanically they solve but it may be an advantage for English. Although they may not be an advantage for other fields, in English for instance, there is a vocabulary question and students find the answer directly. The recalling is easy for vocabulary since they are situated. Besides the vocabulary is actively used, but I do not know whether it is an advantage or disadvantage but it is good for English vocabulary. Although it is mechanic, it shows that they are read.

However, only one sixth of them remarked OE did not necessitate going over skill as a self-checking strategy before skipping other question. Most of academicians indicated that the students control their answer more in an OE question than MC one. Only Academician B said he did not believe the students have been controlling by expressing "In open ended questions, I do not think that they read or checked."

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Finally the results showed that most of them tried to go over their answer so that they could be sure about this self-regulative process. However, in terms of question format, the tendency was parallel over MC and OE.

Category 3. Judging correctness of solution process

The following table gives the information about frequency of the category *judging correctness of solution process* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 11.
Judging correctness of solution process

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Judging	8	9	4	6	4	3
Not judging	2	1	6	4	2	3

Judging

Judging correctness was also another self-checking strategy emerged as a coding in this research. The results emphasized that the students explained the reason in order to judge correctness of their solution while solving MC. Since judging correctness of solution process stem from the individual's aware themselves and show the possibility of continuation of solution process purposefully. It can be inferred as a self-checking activity. All of the students except two explained that they judged correctness of their solution in MC. Specifically, five students judged correctness for possibility of getting true. For this issue, Student D said "I do repeat my last operation in multiplication or division for instance. If the result is different in both, I empty my mind and re-make the calculation. I confirm in mind." Two of the students explained that judging correctness increases self-confidence. For example, Student A said

"First, it increases my self confidence in my lessons. There are questions I can answer. Therefore, my success increases."

The other reasons arranged respectively as when complex question root where the students did not understand question root easily, when not sure about the question root and choices as if preying on their mind, when they did not find the answer in the choices at first look and when needed more self-satisfaction.

Moreover, the results remarked on the judging correctness of solution way, writing skill or results on OE that the students explained some reasons while solving OE. All of the students apart from one explained that they judged correctness of their solution in OE for calculation control, possibility of getting true, complex question root, crosschecking, writing style, method, not losing point from solution, checking solution way and result. The codes of the skill shown by this study were eight which is more than MC. One of the eight graders mentioned the reason to judge correctness as method by saying "It is not much than the other, but I control. I think they are more or less same, but in open-ended questions, it is more. However, I consider which method to use..."

Nevertheless, the teachers thought a bit differently than the eighth graders on whether the learners judge correctness of the choice they select. Two fifth of teachers described the students judged the correctness when they handle with MC stated as "Students who really try to learn investigate this. They can derive what is asked from them, but as I said this can be observed only on great students in class. I can observe this from only few students." Also Teacher D supported this view with "If they have time, they do. If they have time, they re-solve the questions they are not sure about, but if they have time."

As consistent with the students' perspectives, three fifth of the teachers explained that the children judged correctness of their solution in OE. Most of them explained as similar reasons of following quotation: "In order to the test

the correctness, they should be sure of their knowledge. If they are, they can test. If they are not, they do not have the chance to test. If the student is interested in English, and knows it, they can test, otherwise, they cannot." or "I think, while they are thinking and writing the answer, they have, but no later..."

On the contrary, the thoughts of the academicians were similar with the students. Two third of them agreed that MC was necessitated judging correctness of solution way or selected choice. The students needed to examine their thinking process and how to select the choice during MC questions. Since, some choices are distracter and MC cannot be as easy as the students suppose. For instance, an academician expressed his idea by indicating "When compared to other, to test the correctness is more available since multiple choices are easy. They are usually shorter and clear answers are sought. Even the questions are related to a paragraph, the choices are shorter." Nearly, the thoughts of the academicians were similar with the students and the teachers. The half of academicians who shared their experiences of OE mentioned that OE was necessitated judging correctness of solution by controlling method, writing style or crosschecking. The students should need to examine their thinking process more on OE than MC.

> …Students would need to be careful if there is no notion saying "I get points whatever I write" in open-ended questions. Because students would need to answer the question with care if the teacher points out that he will not give points for those who just include some mathematical operation to get 1-2 points and says that he wants to see all operations and only gives points to logical operations. Then control can be repeated.

said Academician E.

Not judging

On the contrary, one student added they did not judge correctness during solution of MC. For this issue, Student F said "...When I am sure that it

is the correct answer so that I circle that choice as an answer, I trust myself and I do not need to think the question so much since I become sure of myself."

Most of the branch teachers, three fifth, described the student did not need inquiry the correctness of their choices selected while solving MC. Teacher "Fifty-sixty percent of classes are relaxed, I mean they are in the mood of passing the next question, not in the mood of learning something." The judging correctness as a self-checking activity helped the students to be aware of their progress. It increased the possibility of self-regulative force. Two fifth of them expressed judging correctness did not necessary for students while striving for an OE. The experiences of teachers were consistent with the students. For this issue,

> Actually to test the correctness is not a job of ours; we don't even have any criterion. As I've mentioned, if students have the concern to get some points and think that they could just write something no matter what or how much as they are also aware that there is no right or wrong answer, they do not look through their answers. For example, when I ask students' opinion on cigarettes and alcohol students already know that there is no correct or wrong answer. Therefore, he has no need to check the answers and solely comment saying, "I thought this and I've wrote it".

described by Teacher A.

One third of the academicians thought that MC did not require the skill of judging correctness which is a self-checking strategy. For instance, Academician D added

> I do not think. I think the questions are purposefully prepared like this. Some students will have time problems since it is not only measurement of knowledge. There should be elimination. It is not so ethical according to me, but they do that. Maybe this is the most innocent part when we consider rest. Maybe, some students should not answer all questions due to time since the faster ones should forward therefore there is an elimination.

Half of the academicians thought that OE did not require the skill of judging correctness. For instance, Academician B added "I do not think they control in open ended questions."

Finally, it can be highlighted that the participants experienced commonly that MC let the students judge correctness of their calculation or the choice had selected before. In addition, it can be stressed that the participants experienced commonly that OE may force the students to judge correctness of their calculation or solution way more than MC because the intensity of the shared experiences indicated proponents of OE were eighteen participants whereas they were sixteen for MC.

Category 4. Asking how well doing and when during solution process

The following table gives the information about frequency of the category *asking how well doing during solution process* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 12.
Asking how well doing during solution process

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Asking how to do	6	4	3	8	2	4
Not asking how to do	1	3	7	2	4	2

Asking how to do

The students explained that while solving MC, to do self-checking they asked themselves how well they were doing. This statement emphasized that they continued to read and solve MC step by step knowingly and gave feedback to themselves. So, they were aware of recognition how to use their

own solution process on performance of MC exam. Results indicated that all student views excluding one mentioned they asked how they were going during solution process of MC so that they may try to activate self-checking strategy. Also the students asked when to use this strategy, two of the learners asked themselves how they were doing due to choice shifting. Hence, they may need more self-monitoring force not to fall into lack of attention. Student H expressed the reason as "Shifting. For instance, instead of circling a choice, since I focus on the question a lot, there may be a small inattentiveness. I may circle another choice. It is the most frequent mistake in multiple questions due to shifting."

Also one of them preferred this self-checking strategy when they realized that MC was a difficult one. One of them preferred it when especially in numerical lesson such as mathematics. Moreover, one of them used the strategy when he realized to read the question falsely. Finally one of them mentioned they questioned their progress when he did not eliminate the choices in MC enough and one of them explained that he preferred to apply it while eliminating the choices only in verbal lesson such as Turkish, social sciences…etc.

As an illustration Student I said "I check my eliminating the options in verbal not in numerical." and Student G added "In multiple choices, you lose time while reading over and over again since the time is limited. Therefore, you can misread some questions. We lose points."

In terms of OE, results showed that while solving OE, four of the students asked themselves how they were doing on solution process of an open ended question, writing solution strategy. "In open ended questions, you check what you do. You control your answer according to your own path. If you make a mistake, you correct. In multiple choices, I think they [asking how to do] are equal." said Student I.

Nonetheless, the teachers' views were not harmony with the eighth graders. Three tenth of the teachers shared their experience that they observed the students asked themselves how well they were doing The teachers added the children asked themselves how they were doing when memorization, four operations, long paragraph questions. "If the student doubts his answer, he re-solves the question. If he cannot find the answer in the choices, he re-solves." explained Teacher D. For OE, the teachers, correspondingly, agreed with the student. Four fifth of them had experienced the students asked themselves how well they were solving for skimming, knowledge refreshing and control of writing. "but they can test the logic operations whether they are correct or miss any point."

Likewise, one third of the academicians thought as teachers that the students followed themselves how the solution was going. The academicians proclaimed similar idea. Two third of them had experienced the students asked themselves how well they were solving OE,

> How much do they think in process? In open-ended questions they have much time when compared to multiple choices since they are required to produce answers on their own they should evaluate everything. Therefore, they may feel more relaxed...It is also a part of cognitive progress. Determining the error, fix it, make correlations will be advantages for them.

Not asking how to do

However, only one of students' views mentioned they did not necessitate asking themselves how the solution is going to for MC because the learner supported herself by highlighting "I notice my mistakes in difficulty since I cannot be sure about an answer, it is worse in exam." (Student E) On the other hand, three of them did not ask themselves how well OE is going in order to aware their self-evaluation. Student C supports his idea by sharing "In open ended questions, there is a single answer but no clue. You cannot be sure about the answer and it is very important. Therefore, you check your work in

details." The data indicated that OE triggered more self-evaluative solution strategy than MC. The student mostly prefer this strategy when try to solve correctly, sure about possibility of logic of the solution process had written openly. Two students explained they preferred this strategy when sure about what their teacher taught.

Comparatively, most of the teachers rather than three of them observed that the children did not prefer to follow themselves by asking how the solution is going. However, only two of the teachers indicated OE did not make the students ask themselves how the solution was going. As an example, two teachers appropriate for the former claim said "Most of the students do not question whether they are on the right track." (Teacher B) and Teacher C shared her qualified experience by saying

> I think that most of them do not feel. It is my own experience. Certainly there are hardworking students noticing troubles in the process, but most of them do not go back when they find an illogical answer as far as I experienced. Sometime they cannot understand that it is illogical. I can give an example as you asked. We can come across such situations as they divide a number around 500 into 5, and they find a number around 1000. Normally, when you ask the students whether it is logical, they can say no, but during the exam they cannot notice. I feel that they answer as they memorize in multiple-choice questions. There is no logic in memorization after a while. If they proceed reasonably, they can notice the mistake. They should even erase such ridiculous answer although they do not know the answer. However, when they do not use their logic, students can make many mistakes.

Academicians' experiences were parallel with the teachers. Two third of the academicians remarked they did not need to asked how the solution strategy is going during MC. On the other hand, one third of them shared their experiences about the fact that OE did not make the students ask themselves how their solution process was going. Some academicians indicated the learners track the steps very few amount and differentiate MC and OE by stressing, "In open ended questions, if it is not memorization, it is less mechanic. If it is not a definition related to memorization, I think it is less

mechanic." (Academician F), "If we talk about open ended questions and the student thinks he knows the topic and is sure, he passes accepting his answer correct." (Academician D) and Academician E added some reasons:

> Maybe. It totally depends on the attitude the teacher provides them. I think it does. It is not related with themselves since they learn learning strategies from their teacher somehow. They have both their own strategies and teacher's strategies. If the teacher models the controlling behavior by controlling himself during their educational life, they proceed by controlling their own ways as well. Otherwise, they may go back and control or they may not control at all. However, before their teacher, there are many factors such as parents, private tutor, and course teachers. In my opinion, solving with controlling is a learning strategy or problem solving strategy. Let's not say strategy, but behavior, a mechanism. Therefore, if they know and use, they progress accordingly.

To sum up, the most of the participants informed according to their experience MC was so clear that the students did not need to inquire how well they were solving as a self-checking activity and they could easily find the choice. In terms of OE, most of the interviewees, informed according to their experience OE may force the children to activate self-checking strategy more than MC, indicated by eleven over twenty three views, in terms of inquiry about how well doing.

Category 5. Correcting errors during solution process

The following table gives the information about frequency of the category *correcting the errors* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 13.
Correcting errors during solution process

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Correcting	6	7	2	7	4	2
Not correcting	3	3	8	3	2	4

Correcting errors

The fact that whether or not the errors could easily be seen in MC by the students and could correct the errors was wondered. The results indicated that two third of the youths thought they could correct the errors while solving a MC and MC can provide this opportunity. On the contrary, one third of them emphasized that MC did not help the examinees correct the errors. Student F explained how to see the fault easily in MC by saying

> I can see my mistakes easily since sometimes people can directly circle a choice when they see the options and divide as positive or negative. Sometimes I can misread the question root while trying to be fast. When I misread, I give wrong answer. When I try to read the question root fast and think that the question is easy to answer, I usually make mistakes.

The views of OE indicated that all of the children excepting three of them thought they could correct the errors while solving an OE question and OE can provide this opportunity. However, three of them shared they could rarely correct the mistakes while solving OE. The child who can see the fault rarely remarked "Partly. I can see my mistakes in multiple choices question but I cannot in open ended questions." (Student D) and the student who mentioned OE provide an opportunity in order to find the errors easily "In open ended questions we may need to review since we produce our answers on our own. If there is a mistake, the question may completely be incorrect. It may all go to trash. It may be controlled again." (Student H) and "In general, there are not many big mistakes, but I can see my mistakes easily. In some operations, there can be simple errors." (Student I)

The results shown from the teachers indicated two of them agreed with the children that MC provided them correcting errors. On this issue, as consistent with the students' perspectives all of the teachers except for three with the children that OE provided the eighth graders correcting errors. The former idea was informed by Teacher A "...it directs to numerical things only. If they do not learn anything from their mistakes, the question does not make any sense." but the latter one was highlighted by Teacher D

> In open-ended questions, the spaces are larger while solving. It becomes large spaces not small spaces as in multiple choices. While they are making their operations, they notice their mistakes and re-make them. They have more control since they have larger spaces to write their answers. While they are operating, they notice their mistakes and correct immediately. I observe that they notice their path is incorrect and fix it.

The data collected from the academicians indicated all of them apart from two mentioned they experienced the students tended to correct their mistakes while solution process of MC. Their results were associated with the students indicated. There was a relation between the students and academicians views. Interview analysis also indicated merely two of the academicians mentioned they experienced the students tended to correct their mistakes during solution process of OE.

The former notion was informed by Academician E

> In multiple choices, they may make mistakes due to lack of concept knowledge. However, they can circle the tricky choices which direct tricky concept. If they make operational mistakes, it is noticed easily since if they make a mistake there in operation, it is a specific one, but if there is another mistake they can see it immediately. They can control their calculations. They see it more easily in multiple choices…

but the latter one was highlighted by Academician A

> How much do they think in process? In open-ended questions they have much time when compared to multiple choices since they are required to produce answers on their own they should evaluate everything. Therefore, they may feel more relaxed...It is also a part of cognitive

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progress. Determining the error, fix it, make correlations will be advantages for them.

Not correcting

Moreover, on the contrary, the interviewees mentioned not to see the error and corrected them easily. Student J who was one of the three eight graders could not see the fault easily during MC exam because of "I cannot see due to thrill, but after the exam I notice." Three over ten children emphasized that OE did not help the examinees correct the errors. These views were almost near to the results indicated for MC by same students.

> I see in open-ended questions, but sometimes I cannot. When there is a mistake only in one point and the others are correct, I cannot see the mistakes. Sometimes the calculations can be mixed. Sometimes I cannot see. Sometimes I give up on the half way. Then I answer other questions. I forget to answer that. For instance, I find x, and forget to find y. said Student J

All of the branch teachers excepting two mentioned the students could not correct their errors easily on MC. Three tenth of the teachers mentioned the students could not correct their errors easily while writing the solution steps, writing comments or controlling calculation over OE. Teacher H who experienced the children did not correct their mistakes easily by planning their thought expressed

> In long paragraphs, the meaning can result in mistake. I mean they need to understand the meaning, and if the paragraph is long, error risk increases. Vocabulary knowledge also affects. If it is not directly related to the grammar and have vocabulary deficiencies, they make mistake. Of course misunderstanding or misinterpretation. Sometimes students cannot understand totally and make mistakes.

And this view on MC highlighted and added by Teacher G as

> 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…

Over OE, the notion was expressed by "They cannot see. They are limited. They are limited to their knowledge and analysis."

Furthermore, only two of the academicians indicated MC was not required to be thought over the mistakes because the errors could not be seen easily in this format. Distracters directed the students. It was remarked as

> ...multiple-choice questions usually are the questions with wide range measurement with ambition factor. We define validity as measurement of the instrument for the variable without mixing other variables. However, prominently in ALES, the pace is included as an aspect and it decreases the validity. Even the verbal part of ALES is consisted of easy questions. For the people who can understand what they read it is easy to get high marks. In such exams, in my opinion, they increase the number of questions to draw the average in balance. Therefore, reading and operation pace also are included. I can claim that it decreases the validity. With studies, it can be proved. When the pace factor is included, the review is less possible since the time can be a problem. (Academician B)

Their results were not associated with the students or teachers indicated. Two third of the academicians, four views, indicated OE was not necessitated to be rethought over the errors noticed because the errors could not be seen easily in this format because of the fact that OE could be so long to reanalyze or the written answer can be subjective that the children could not realize their mistakes. One of the exemplar was as follows

> In open-ended questions it may not be possible to see their mistakes. Multiple-choice questions require a control mechanism. If they go back, check and re-make, they can fix, but if it is concept error, they cannot fix it... Same mentality can be in open-ended questions. All the operations can be correct but due to misconception, they can make mistakes.

Generally, nearly most of the participants informed that in OE question format the learners may try to correct errors more than MC format. They could

be aware of their mistakes while solving the problem and correct them easier and quicker.

Category 6. Asking questions to stay on track

The following Table 14 gives the information about frequency of the category *asking question to stay on track* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 14.
Asking questions to stay on track

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Asking questions	2	6	3	5	1	2
Not asking questions	1	3	7	5	5	3

Asking questions

According to Table 14, few of the students added that they ask themselves some questions and force to stay on track during solution process of MC. Two third of the outcomes collected the eighth graders indicated that they sometimes asked questions themselves to stay on track by motivating. They checked their process during reading question, decision making or calculating by asking themselves, "Is everything ok? Am I doing it right?" They tried to evaluate whatever they proposed during solution of MC. Student D shared his taught "Sometimes I ask myself whether I am on the right track, but not always." and Student A informed "Yes, I ask sometimes whether the is answer is this or that. I have to be sure of one of them since I have to circle one of them." Two third of them mentioned they asked questions themselves to stay on track by evaluating themselves during process in OE assessment. Four

views of them asked the questions to stay on track rarely. It can be inferred that OE may trigger this skill lower than MC.

Three tenth of the teachers, unlike the students, explained they sometimes needed to force themselves by asking to stay on track. "If they cannot find the result, yes, they ask." talked Teacher D. Half of the teachers explained they needed to force themselves by asking to stay on track. Two of the perspectives expressed the students needed this skill rarely for OE. One of whom claimed "If they find a good result, they think it is correct no matter it is true or false. In open-ended questions, they understand well when they cannot make it. They cannot move the pencil. They cannot make any operation step and admit that they do not know the answer."

Moreover, the results stressed that the academicians had also gained similar common experiences with the teachers on this strategy over MC. One sixth of academicians remarked MC was a format which were not necessitated the children to evaluate themselves by asking stay on track. Five sixth of them, on the contrary, mentioned the children needed to think whether or not staying on track in a MC assessment. Academician E explained her observations by saying

> They 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.

On the contrary, the results stressed that the academicians did not gain similar common experiences with the teachers and the students on this strategy over OE. Merely two fifth of academicians remarked OE was a format which were necessitated the children to evaluate themselves by asking stay on track.

Not asking questions

Furthermore, the results coming from 8th graders about the sub category of *not asking questions* indicated that one third of them did not ask themselves whether or not they stayed on track. For instance, Student E said as an opponent of aforementioned idea "I have a difficulty in seeing whether I am on the right track since I am not sure about a question and I am not in the exam either." On the other hand, one third of them did not ask to stay on track during handling with OE question format.

Most of the educators, seven tenth of them, experienced that the children did not ask themselves whether or not they stayed on track during solution of MC. They shared dissimilar experience toward the learners. "I believe there are few students doing that. Rather than dealing on their own they can compare with others or they ask a teacher, they ask us." said Teacher E. Likewise half of the educators experienced that the children did not ask themselves whether or not they stayed on track during solution of OE.

Furthermore, the strategy including evaluation by questioning stay on track the solution was observed by the academicians. Most of the participant academicians shared negative response on this strategy. Three fifth of them, on the contrary, mentioned they needed to think whether or not staying on track over OE format in large-scale assessments. Most of the participant shared negative response on this strategy.

All in all, it can be inferenced that the most of the participants, thirteen over twenty four notions, informed according to their experience OE may force the children to activate self-checking strategy more than MC, indicated by six over nineteen views, in terms of inquiry about staying on track in the solution process. In addition to actual interview, focus group interview teachers' perspectives indicated that the eight grade students may not do self-checking much during MC. For OE format, according to the teachers' perspectives

interviewed in focus group, in terms of self-checking dimension, the teachers remarked that the children may tend to judge the correctness of their solutions whereas by not doing in MC. However, the participants did not mention specifically about whether the children could correct their errors easily and motivate themselves to stay on track during solution of OE. Generally it was emerged that OE may activate the eight-grade students self-checking skills more than MC.

Theme III: Worry

Under this theme, MC and OE will be compared on how students feel about themselves such as worry from the point of seven categories according to the students, teachers and academicians views respectively. Interviews were conducted with 10 eight grade students who had been possible TEOG candidates, 10 branch teachers and 6 academicians to find out how much worry the students feel on MC or OE that is one of the sub dimensions of affective phenomena. Their tendency about worry over OE and MC were compared. The possible metacodes inferenced from this research were type of feeling created, feeling of disappointment and regret, feeling of requirement to study more, happiness caused by question format, concerns about what if done on the formats, students' feeling of confidence and students' feeling comfort.

Category 1. Type of feeling created

The following Table 15 gives the information about frequency of the category *type of feeling created* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

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Table 15.
Type of feeling created

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Number of type of feeling	16	14	10	13	9	5
Positive	4	4	3	2	1	1
Negative	12	10	7	11	8	4

Number of type of feeling

Table 15 indicates for students do not express a great difference in their feelings when they presented with either MC or OE questions. When the students asked whether or not MC question format created any negative feeling, they described 16 different affective facts, 12 of which was negative but 4 of which were positive. Similar, for OE problems students expressed 14 affective facts, 4 of them were positive and 10 of them were negative.

Responses indicated that MC question format in large-scale assessments created 12 different perturbational propositions between ten eight grade students. Three-fourths of the students' views determined MC created worry during exam. They also mentioned other types of feelings to describe worry as exam stress, anxiety, panic, conscience, mistrust, fear, angry and cry, press and force, depression and ambition, suspicion and motivation decrease. Some described more positively such as satisfaction, no despair, no negative feeling and even experience of learning from fault.

> Student D: Actually, the first ten questions are difficult and the other ten questions are easy. Therefore, I want to **cry** during first ten questions since I think I cannot make although I study hard. Or I feel nervous. Since the first ten questions are difficult, I start from the last ten questions because they are easy. I start from easy to difficult.

When we examined the responses given for OE question case, ten of the students' views indicated that OE created worry during exam. They also mentioned other type of feelings to describe worry as exam stress, angry and cry, motivation decrease, strain, sad, doubt, prejudice, unsteady and unpreparedness and fuss. Some (one fourth) described more positively such as being sure, satisfaction, no worry and happiness. Student I talked as "I do not have many questions in which I have difficulty. I pass these questions also. I first answer the easy questions." It can be inference that the participants had common idea over the fact that MC created worry on eight grade students.

Examination of teachers' views on how their students would feel when they deal with MC or OE questions showed that for MC teachers observed 10 different feelings the students had experienced during studying with MC and for OE they observed 13 different feelings. In depth examination of each feeling for each question types showed the following: Seven teachers indicated MC created negative feelings during large-scale exams. They also mentioned other type of feelings to describe worry as dislike, anxiety, pressure, motivation decrease, depression and ambition, and hesitation. Only three of them described more positively such as no worry, happiness and, love and attraction. When we closely examined OE questions, teachers observed that 11 out of 13 responses of teachers indicated OE questions created negative feelings on students. They also mentioned other type of feelings to describe worry as anxiety, fear, motivation decrease, depression and ambition, sad, prejudice, uneasiness, not liked, bored and excited. Only two responses of teachers indicated positive feelings such as such as no worry and happiness. For instance, Teacher A talked as

> As I said, I find easy. Since there are choices and they are happy when they answer, students prefer multiple-choice questions. Naturally, they are happy when they answer. I do not observe that they are unhappy when they cannot answer. Yet they feel happy when they answer the questions and learn their number of correct and incorrect answers.

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The examination of academician's views was parallel to students' and teachers' views when we consider MC question case. Yet, academicians provided limited types of feeling (n=5) for OE questions. They observed 9 different feelings when students presented with MC and indicated 8 of them were coded as negative feelings. All of the academicians' views except one indicated that the students felt worry mostly. They also mentioned other type of feelings to describe worry as exam stress, anxiety, motivation decrease, depression and ambition, sad, bored and demoralization. Academicians who described worry as

> Maybe, it is enough for them to study just before the exam day, but there is a misunderstanding that since it is easy to study for multiple-choice questions, the exam does not have to be easy as well. Sometimes multiple-choice questions are more difficult than the open ended ones. It results in **disappointment.** There is an anxiety right after the exam. Students think whether they select all incorrect choices. They cannot be sure so that they feel they make a lot of mistakes.

These findings indicate that academicians also had a similar perspective about worry dimension thanks to their experiences. Interestingly, they had observed 5 different feelings when their students' dealing with OE questions. Four out of five feelings were recorded as negative feelings and the statement of the academicians indicated that the students felt worry mostly. They also mentioned other type of feelings to describe worry as anxiety, fear and, depression and ambition. Only one academician mentioned the students did not feel worry. Academician A who described worry as

> There may be a feeling that students can think that they cannot make comments. It is usually memorization. Particularly commentary questions may increase the **anxiety**. It is not developed in our system. They may be anxious when they are asked something or as soon as they see the question.

Overall comparison of the teachers' views about their students' feelings and students' actual feelings shows that both MC and OE question types dominantly creates negative feelings. Yet, interestingly, when the overall

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results compared for MC and OE, MC it was seen that MC created worry on the students more than OE. One of the possible reasons for this finding is that MC may trigger worry amongst the students both as a question format and as used in large-scale assessments such as TEOG in Turkey.

Category 2. Feeling of disappointment and regret

Some participants in this study expressed worry utilizing disappointment or/and regret terms. Table 16 shows the frequency dispersion of disappointment and regret feelings under the dimension of participants (student, teachers, and academicians) and question types (MC and OE). The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 16.
Feeling of disappointment and regret

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Feeling	6	3	4	7	5	3
Not feeling	3	6	6	3	1	3

Feeling

When the students mentioned about worry, such as six of them, added that they also felt both disappointment and regret. However, total 6 students expressed their worry in relation to either disappointment or regret. Four out of 6 students described his worry as disappointment and four as regret. For instance, Student E who shared her own idea as feeling disappointment said:

> It is much but I think sometimes disappointment is necessary to learn from mistakes. Even all your answers are false, you learn from all mistakes by studying them and you become better than others (other students). Since I am disappointed most of the time, I cannot study for a few days or I cannot concentrate on. It may result in a bad situation.

Examination of students' responses when they deal with OE questions, unlikely MC a few of them (n=3) indicates they felt disappointment and regret. For instance, Student E who shared her own idea as feeling regret expressed her idea "There is no anxiety. When I cannot find the result and be sure about my grade, there is an anxiety. However, when the grades are announced, the anxiety disappears, rather I feel less informative."

Student who shared her own idea as feeling disappointment said

> There is not much of anxiety as one writes down the answer because you think that the answer is correct. But when one notices that the answer is wrong one gets disappointed and de-motivated because it seemed correct while writing it down. One thinks of his mistake and the reasons so there is some disappointment and demotivation.

Different response pattern were coded when we examined teacher's opinions. Only 4 teachers thought MC made students feel in that way. Unlikely students, we can conclude almost quite opposite, teachers thought OE questions are more likely to create these feelings. Seven out of 10 teachers mentioned about worry in terms of disappointment and regret. Four out of these seven teachers' views added that students would felt disappointment and three of them mentioned they would feel regret. Teacher who shared her/his own idea as feeling regret said,

> That results in negative feeling since students need to answer one by one and it results in anxiety. As I said, when students are accustomed to multiple choice questions, they feel anxious in open ended questions. They do not have the chance to give correct answer if they operate incorrectly. In multiple questions, they have twenty five percent chances to select the correct answer. In open ended ones, they need to know the answer. If the exam is consisted of open ended questions, they feel very nervous. Therefore, they want multiple choice exam or questions in exams.

The academicians' views were in line with the students' thoughts on the examination of MC question type. Five out of six academicians indicated that MC created disappointment and regret on the students so that it caused worry.

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Specifically, three views highlighted MC created mostly disappointment whereas one views highlighted MC created regret. On the other hand, the academicians' views indicated half of them experienced OE created disappointment and regret on the students so that it caused worry. One view highlighted OE created disappointment whereas two views highlighted OE created regret.

> Academician E: I think the open ended questions result in more anxiety since they have no opportunity to answer. There is no choice in open ended questions so that they should present their findings. They need to do everything carefully and step by step. They need to show all operations for problem solving. They need to write unity at least. Therefore, it is more demanding. Although they operate correctly without some calculations, the grading depends on the teacher. They may not get any points. However, in multiple questions, there is no such a case. The answers depend on four or five alternatives and one is the correct one. Students try to reach the correct one.

Not feeling

Among all three students mentioned MC did not make them feel any disappointment or regret. Researcher asked the reasons why they did not feel any disappointment or regret, student stated since they were accustomed to MC so that he did not feel any disappointment or regret. Following quote indicates Student H justification of why he did not feel any disappointment or regret: "I progress for sure in such questions, I can say. It may be result of practice before the exam. I get accustomed to the question types since I practice before. When I see that question, I answer by being sure."

6 out of 10 learners did not experience any of the feelings for OE format when they described their worry. One student did not state any thoughts on whether he would describe his worry in terms of disappointment and regret feelings.

Unlikely the students' experienced, the teachers think MC would not create that much disappointment or regret on students. 6 out of 10 teachers thought MC did not make them feel disappointment or regret. Similar discrepancy was observed when we examined teachers' view on whether dealing with OE questions created disappointment or regret on students. Merely, three teachers stated OE did not make them feel any disappointment or regret.

Only one academician shared his experienced on the fact that MC did not trigger any disappointment and regret much.

> Academician F expressed her experiences by indicating "They are happier. I think production is more difficult. Besides they cannot remember in open ended questions, but in multiple choice questions, the choices can remind them. They may find production difficult. As I said, they need to improve. There, only reading comprehension is evaluated. In other, the writing is evaluated. For English, writing should be designed and produced. I think, open ended questions need more than one skill. In multiple choice questions, the content is broader if you do not ask five or ten items and students feel comfortable to answer since they may know something related to content."

Half of the academicians (n=3) shared his experienced on the fact that OE did not trigger any disappointment and regret. To sum up, overall results remarked that MC would make the eighth grade students feel disappointment and regret more than OE. Yet, teachers' dominantly believes the opposite. Although this feeling was one of the category of worry emerged from this study, it may seem to be one of the contributor of triggering worry over the students in large-scale assessments.

Category 3. Feeling of requirement to study more

Table 17 shows the frequency dispersion of requirement to study more in relation with the dimension of participants (student, teachers, academicians) and question types (MC and OE). The following Table 17 gives the information about frequency of the category *feeling of requirement to study*

more (i.e. saying I wish I had studied more). The table points out how many participants were told the category. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 17.
Feeling of requirement to study more

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
What if studying more	2	4	3	6	3	5
Not studying more	8	6	7	3	3	1

Students' feelings: what if studying more

Two of the students accepted the requirement of studying more before conduct the MC test. Feeling of necessity of study more was emerged on OE since four students feel they should study more OE tests. The students sometimes could feel what if they had study much for the exam while they were solving an OE so their worry can increase. "I think we prepare ourselves to be faced with more unexpected questions in the tests. But sometimes I feel that I should study more on the subject. In addition, preparation of different type of questions should be taken into account for MC." said Student H on this issue.

Teachers' views on the requirement of the study load also similar with the pattern gathered with students' views. Few of them (n=3) accepted the requirement of studying more before conducting a MC test. The issue of study requirement load is more for OE exams has emerged in students' responses. More than half of the teachers (n=6) thought that the students should study more before taking an OE exam. For MC, Teacher E stated, "Due to the fact that there are many distracters in MC, the students should be careful more and

study more for higher number of questions. Sometimes they said what if I study more before the exam…" For OE, Teacher F shared "I think they need to study more on OE than MC because there is not any connotation or remindful things. I hear these from some of the children…"

Half of the academicians indicated the students had feeling of requirement of studying more during solution of MC. The academicians also thought similar with the teachers on the issue of study load requirement for OE tests. Only one academician response indicated the students felt satisfaction of amount of studying while majority of the responses (n=5) except one indicated the students had feeling of requirement of studying more during solution of OE.

> Academician A: Yes. They should study harder when compared to multiple-choice questions. Since they have more practice by reading and solving in multiple-choice questions, they are faster. However, they need to understand the content in open ended ones. When they are asked such questions, they need to go into details in order to answer and develop their expression skills. They cannot just read and pass. They need to read again. They do not need to memorize multiple-choice questions…

Students' feelings: not studying more

The students did not think MC format required studying more. They can easily handle with it. Whether or not they were asked if feeling of any requirement of studying more as remorse during the exam, eight of them thought they don't have to study more before solving MC. Student E thought she should not have study more by saying "It is necessary to study before the exam at least three or four days before. It is a need to study the topics and multiple choice questions." Yet six of the learners still did not accept the requirement of studying more before conduct an OE test. As discussed above worry was another indicator of affective characteristics that are related with metacognition.

Teachers' views on the requirement of the study load also similar with the pattern gathered with students' views. More than half of the teachers (n=7) mentioned the students should not have study more before solving MC. This issue becomes more solid when we examined teachers' responses. Only three of them think the requirement of studying was not more before taking an OE test. On this issue, Teacher F expressed by saying

> I think open-ended questions require much effort than multiple choice questions since there is not anything to remember or any presented statement to recall. The student should be clearer in mind since he need to write the sentence himself. The student needs to be clear in terms of recalling, not comprehending.

Examination of responses of academicians under this category indicates a balance between required study loads for MC exams. Half of them expressed the students felt satisfaction of amount of studying.

> Academician C: If teachers want their students to prepare for multiple-choice questions, they make them practice a lot. They exercise multiple-choice questions or suggest them to buy a multiple choice questions book for home. When I buy the book, what do I come across? Multiple-choice questions. Therefore, the teacher provides the students with practice. The teachers never suggest students to buy open-ended questions book or they do not present such questions as exercise.

Half of the academicians (n=3) also mentioned MC did not required of studying much by the learners whereas only one of the academicians indicated students did not feel much of "what if I studied much on OE exam" during the problem solution. Academician B, as an example, shared their experience as "…I do not think that the children need more studying. Especially I want to draw attention that it is not about MC exams. I mean it is not an issue about any item format; MC or OE…"

To sum up, from overall results, it could be remarked that OE may cause the eighth grade students to feel obliged to study more than they study for MC. It means that the students tend to ask themselves intuitively "*I wish I could study more for the exam*" and this feeling could lead to make them sense

worry during the assessment. Although this feeling was one of the category of worry emerged from this study, it may become one of the contributor of triggering worry over the students in large-scale assessments.

Category 4. Happiness caused by question format

        Table 18 below shows the frequency dispersion of feeling state (happy versus unhappy) in relation with the dimensions of participants (student, teachers, academicians) and question types (MC and OE). The information about frequency of the category *happiness caused by question format* from each interview participants was collected. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 18.
Happiness caused by question format

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Unhappiness	5	5	4	5	2	3
Happiness	4	5	6	4	4	3

Students' feelings of unhappiness

        The students also talked about how they felt as well as their happiness during performance of MC. Table 18 indicated that the number of students who felt happy about their performance were quite close to the number of students who did not. Half of the students (n=5) who did not feel satisfied with their performances, described their happiness state as "I am not happy with my performance." An illustration of both cases provided below from actual student quotes:

Student C who did not feel happy mentioned:

…since we come across many multiple choice questions in books we evaluate what we know with true and false answers. After a while it results in anxiety and dissatisfaction. Yet particularly in open-ended questions, when our teacher explains the questions, we feel more secure about the answer and the content knowledge. I trust myself in open-ended questions more.

On the other hand, the data communicated similar pattern for OE. Exactly half of the students even did not feel satisfied and described their unhappiness as: "I am not happy with my performance." As an illustration, Student D explained "…I make better at multiple choice questions than open ended questions. I feel crying, anxiety."

Only four teachers observed the children and stated they did not feel satisfied and described their unhappiness. Teacher E stated: "They have anxiety. It is prominent. There are students crying in the class when they cannot get their expected grades. It is not because of getting low grade, they cry although they get good marks due to anxiety level." and Teacher H evaluated this feeling with a different dimension as "When the exam 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."

When it was examined teachers' views on students' happiness state on solving OE questions, it was not recorded a great difference. Yet, teachers thought students felt unhappy more when they engage with OE questions. Five teachers thought this way. The view provided by academicians shows some differences from the views of both teachers and students. For instance, for MC both the number of the views teachers and students almost indicate fairly a balance between feeling happy and unhappy state. Yet, academicians think in a reverse direction, a few academicians indicated that the children became unhappy on their performance and felt discourage while solving MC format.

Correlatively with the students and even with teacher with a minor difference (n=1 view), half of the academicians shared that the children became unhappy on their performance and felt discourage while solving OE format.

Students' feelings of happiness

The students nearly half of them (n=4), who were happy on their performance, felt courage while solving MC format. Student D who felt happy stressed "I mean I feel more secure. Multiple-choice questions are easier for me. At least I know that one choice is correct, but in open ended it is not same. I think a lot in open ended questions." When the mood of the students examined in terms of OE, half of the students were happy on their performance and felt courage while solving OE format. Student C who felt happy stressed

> In multiple-choice questions, there is more anxiety and less satisfaction since we apply these types of questions more in exams of our program. We only apply open-ended questions in written exams. During the semester, we solve multiple choice questions in the extra books that our teachers give use for support or exams so that we evaluate what we know with true and false questions. It results anxiety after a while. However, in open-ended questions, our teacher explains the topic and we feel more comfortable.

Examination teachers' view about whether students felt satisfied and happy about their performance on MC and OE showed similar results with students. The frequency distribution the responses change briefly. Most of the teachers (n=6) shared that the children became happy on their performance and felt courage while solving MC format. Four of them indicated the children felt courage and happiness while solving OE format. On the other hand, four of the academicians engaging with OE supported the view of the children did feel satisfied and described their happiness as

> …some students feel happy since they compare their answers with each other after open ended exam. They compare their results for each question. They are more focused on the results rather than the operation so that if they make a mistake during operation they think they will lose

points. Yet, when they see that they get points from the operation steps, they become happy. (Teacher B)

On the contrary, most of the responses of academicians showed, academicians observed that the children did feel satisfied and described their happiness, as "They are happier since production is difficult. Besides, they cannot remember in open ended questions, but multiple choice questions can help them remember." (Academician F). Correlatively with the students and even with teacher also, half of the academicians observed the children did feel satisfied and described their happiness as

> What I observe is that students can understand whether they achieve or not in open-ended questions. They know what they can and cannot answer during open-ended questions. Although they make a hazard guess for a question, they know that they cannot answer it. They write something for the sake of filling the gap. Here I mention students with metacognitive skills. I do not mention students who are not aware of their skills. However, an average student can understand what he can or cannot do during an open-ended exam, I believe. If there is not a curve or other measurement aspects, he can know what he will get as a grade, in my opinion…

To sum up, it did not recorded a great difference between MC and OE but overall results suggest that OE can lead to the eight grade students less happy than MC. Although this feeling was one of the category of worry emerged from this study, it may became one of the contributor of triggering worry over the students in large-scale assessments.

Category 5. Concerns about what if done poorly on the formats

The following table gives the information about frequency of the category *concerns about what if done poorly on the formats* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 19.
Concerns about what if done poorly on the formats

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Concern about	5	4	5	6	4	4
Not concern about	5	6	5	4	2	2

Concern about what if done poorly

Table 19 shows that some students also felt worry when they thought that they could be unsuccessful and did poorly in MC. Half of the children shared they could concern about what if they can do poorly so that this kind of feeling can decrease motivation. For example Student F mentioned their motivation decrease as "…There are some questions which everybody cannot make. If I am stuck at three or more questions in following, my motivation can decrease." For OE questions, some students (n=4) also felt worry when they thought that they did poorly. These students shared they could concern about what if they can do poorly so that this kind of feeling can decrease their motivation during examination of OE. For example Student B said

> …you have an option in multiple choices. I mean you have an option among four alternatives, but in open ended you do not have any. For instance, if you cannot answer a difficult question in open ended you cannot answer, but if you are in between of two choices in multiple choices, you can at least select one. You know that one of them is true, but in open ended you have no idea about the answer…The open ended questions are much worse than multiple choices….

Teachers' views also exactly follow the same pattern with students' views for the case of MC questions. Half of the teachers mentioned according to their experience that MC created more concern about the current performance on the students and they were faced with asking what if they were doing poorly during MC. Examination of teacher's responses indicates an emergent issue that OE questions more likely creates worry, when students feel they have concerns about their performance. Most teachers (n=6) mentioned according to their experience that OE created more concern about the current

performance on the students so that they asked what if they were doing poorly during OE. One of the teachers said "In the beginning, they have the idea that these types of questions are more difficult. There is an attitude. They feel comfortable when it is multiple-choice questions. They panic in open ended questions." (Teacher F)

Unlikely teachers and students' views, academicians' responses provided a distinction in the level of worry when students presented with MC questions. 4 responses of academicians, explained the children asked themselves what if they could not do successfully during MC so that their mood decrease and worry was increased. Most of the participants explained their opinion toward the concern about what if poorly doing over MC. The emergent issue observed in teachers' responses becomes clearer in academician's response patterns. All academicians explained the children asked themselves again and again what if they could do successfully before or during the solution process of OE. In this case, their mood was open to be decreased by increasing worry.

Not concern about what if done poorly

On the other hand, other half of the children did not concern much about their performances and though much about what if poorly in MC. Student H added

> I think there won't be so much since some questions have answers in other questions or choices. I think the motivation should not be decreased. We should look at other questions. Previous questions' answers can be in the given information of other questions. There should not be any disappointment or pessimism.

Rest of the students (n=6) did not concern much about their performance and thought much about what if poorly in OE. On this idea, a student added

> Since it is our own way to answer in open-ended questions, it proves me that I do not know the answer. Since I do not get any help from

anywhere or anyone, I use only my own knowledge; it proves me that I make the mistake on my own. I prefer to use different methods to solve the question or think about the topic. (Student H)

Also half of the teachers according to parallel view of the students explained MC did not cause this kind of feeling. One of the teachers said "Students say 'I made a hazard guess, but it was not correct'. They mock this situation. There is no mourning about the situation. If the answer is incorrect, even the student who makes the mistake mocks himself…" (Teacher A) Rest of the teachers (n=4) explained OE did not cause this kind of feeling. The proponent view of a teacher said "…in open ended questions, if there is someone who knows the answers, their eyes become bright and it consists half of the class, I think…." Only 2 academicians explained MC did not cause this kind of feeling by saying:

> If they are successful although they do not study hard, they think they are lucky. They think that they can do well in such an exam without studying and their self-confidence increases. They can have such an idea, not a feeling that they should study harder if they are not successful.

Among four academicians, two of them also explained OE did not cause this kind of feeling. Most of the participants explained their opinion toward the concern about what if poorly doing over OE by saying

> Maybe, there can be such a feeling that I cannot make comment. I mean there is always memorization. Particularly, commentary questions may increase their anxiety due to their development in the issue. As I said, they can feel anxious when they are asked such questions.

All in all, overall results with aforementioned category suggest that OE and MC made the eighth grade students feel worry fairly close by being imagined what if done poorly. Only an emergent issue addressed OE questions may have potential to increase worry when students feel they are not performing well. This recorded feeling was one of the categories of worry emerged from this study.

Category 6. Students' feeling of confidence

The following Table 20 gives the information about frequency of the category students' *feeling of confidence* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 20.
Students' feeling of confidence

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
High confidence	6	7	8	2	4	1
Low confidence	3	3	2	8	2	5

Feeling of high confidence

Table 20 shows that majority of the students (n=6) felt high confidence while solving MC. One of the students who felt high confidence, for example Student B, said "If you do a lot exercises, it is difficult to have high self-esteem…" Most of the students (n=7) said that they felt high confidence while solving OE. One of the students who felt high confidence, for example Student C, said "I believe in myself in open ended questions. Although I am accustomed to multiple choice questions, I think I can make more mistakes in these types of questions."

The teachers presented their opinions about whether or not feeling confidence emerged thanks to MC format. Parallel with the students' response pattern most of the teachers (n=8) declared the students felt much confidence. One fifth of them declared the students felt much confidence. As consistent with students' and teachers' opinions, the academicians shared their experience on whether or not MC help the children feel confidence. All academicians said

most of the students felt higher confidence on MC than OE, and only one academician stated most of the students felt high confidence on OE. Academician D added "It depends on the student. The student who can explain himself can feel more comfortable in open ended questions. However, it is also related to the difficulty level. If the question requires so much comment, it can disappoint the student…"

Feeling of low confidence

Rest of the students (n=3) did not feel confidence and courage of MC or feel low confidence. But Student C who felt low confidence about MC said "Self-esteem is lower. Although I am accustomed, I think I can make more mistakes compared to open ended questions."

Table 20 communicated similar response pattern for the examination of OE question case. A few of the learners (n=3) did not feel confidence and courage of OE or feel low confidence. Student D who felt low confidence about OE said

> It is less. I trust less when compared to multiple choices since I know I cannot make it. Or it is due to others' talk. They usually say that open ended questions are more difficult. When I hear all these sayings as well, I think how I can make it if they cannot make. Besides, the exam is difficult.

Very few number of teachers (n=2) stated MC created low confidence. Teacher I shared her idea by commenting "They do not have trust. They believe in luck. They think that they do not need to study hard. I assume that." Totally contradictory response pattern deduced from the Table 20, when we compared teachers' and students' thoughts about whether or not feeling confidence emerged thanks to OE format. Four-fifths of the teachers said OE created low confidence. Teacher J stressed "I respond negative to this. I think it is not. They are exposed to a system from first-second grade therefore they do not have. They do not have efficient situation. They do not have trust, I guess."

Within four academicians two of them the children felt low confidence on MC. To illustrate Academician B said fascinatingly,

> I think they feel more secure in answering multiple-choice questions but I think it is **not real** since students are exposed to badly ineffectively stated questions at school. Inappropriately stated questions have many aspects such as long answers since it is long to give the answer for which one is correct statement. Or you can direct the students to the right answer with the words you utter and it is due to poor writing. I mean, I guess that they perceive such testing techniques can provide an opportunity for the students to answer correctly although students are not ready in terms of knowledge. I see that it works for some questions and these questions are stated poorly.

As consistent with the teachers' opinions and contradictory with students' opinions, the academicians shared their experience on whether or not OE help the students feel confidence. Some of the responses from academicians indicated that the children felt low confidence on OE. To illustrate this view one academician said "I think their self-esteem is lower when they are exposed to such questions." (Academician A)

Overall results with aforementioned category indicated MC can make the eighth grade students feel higher confidence than OE. On the contrary, the eighth graders felt lower confidence on OE than MC. This feeling was one of the category of worry dimension emerged from this study. It can be highlighted that OE question format may prompt worry over the children with regard to feeling of low confidence.

Category 7. Students' feeling of comfort

The following table gives the information about frequency of the category students' *feeling of comfort* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 21.
Students' feeling of comfort

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Feeling of comfortable	2	3	4	0	1	1
Feeling of uncomfortable	0	4	0	0	3	5

Feeling of comfortable

Additionally, only two of student participants expressed how they feel while solving MC questions. They indicated that they felt comfort during solution process of MC. For instance, Student G shared her idea as:

> Most of the time, we make multiple-choice questions. In general, open-ended questions are not used in school exams or common exams so we do not ask students as well. When we give open-ended questions, they are not many. We solve multiple-choice questions and we learn the types and techniques. I am more used to and more comfortable with them.

Three student responses showed they feel comfortable during solution process of OE. Because Student C shared her idea as "I personally feel more comfortable in open ended questions since I can give details." On the teachers' point of views, only four participants provided an explanation of how their students feel during solution process of MC. These teachers thought students feel comfortable. Since "Yet, when they ask if it is multiple choice and learn that it is, they relax. They prefer multiple choices. They think they can success for sure…" as Teacher F explained.

In addition, one academician view, one fourth of them, expressed MC made the students feel comfort due to format easiness. Total view indicated that most of the participants gave this opinion about the fact that MC made the eighth graders feel comfort during the solution process in the large-scale assessments. Only one academician response indicated OE made the students feel comfort as consistent with the eighth grade students' experiences. Here is

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the one academician actual quote how they believed OE made students' more comfortable than MC in the solution process: "They are absolutely more comfortable in open ended questions as they have the opportunity to follow the progress. In other, it is more closed."

Feeling of uncomfortable

Feeling uncomfortable was another category emerged from this study that reflects worry. Four responses from the children indicated they felt uncomfortable while solving OE. Here is one quote exemplar this feeling:"…Yet in open-ended questions, there is only one answer and no clue. They cannot confirm your answer by looking at the answers below." On the teachers' point of views, none of them gave opinion about whether OE made the students feel comfort thanks to its format.

Three academician views, explained MC did not make the students feel comfort. From the point of academicians' view OE questions dominantly made students uncomfortable in the solution process. Yet, five responses of the academicians based on their experiences indicated OE did not make the students feel comfort. Total view indicated that most of the participants gave this opinion about the fact that OE made the eighth graders feel uncomfortable during the solution process in the large scale assessments. Namely, it did not feel of comfort.

All in all, overall results with aforementioned category suggest that OE can make the eighth grade students more discomfort than MC. Even this feeling reflected more worry. On the contrary, the eighth graders felt higher comfort on MC than OE. This feeling was one of the category of worry dimension emerged from this study. It can be inferred that OE may force the children feel more worry in terms of feeling unconfident during the solution process.

In addition to above, focus group interview showed that the learners feel relax yet at the same time ambition and dissatisfaction while examining with MC. MC may trigger disappointment so that they feel unhappy. They may not concern much about by asking "what if" during solution process. The students may feel mostly confidence. However, the focus group interviews did not remark on whether MC provides comfort or not. For OE, in terms of worry which was one of the affective dimension, the teachers' common perspective was that learners mostly seemed to feel ambition during MC due to the fact that the MC has been used for large scale assessments where children have to race for upper stages. On the other hand, children feel confidence on OE rather than MC but the teachers did not provide a distinct differential effect of OE and MC in terms of other categories; feeling of disappointment and regretful, of what if studying more before the exam, of unhappiness, what if done poorly during exam and of comfort. The teachers indicated the students generally express unwilling sayings such as "offf" about OE and shows prejudice to the format.

Theme IV: Effort

Under this theme, MC and OE will be compared on how students use their effort from the point of five categories according to the students, teachers and academicians views respectively. Interviews were conducted with 10 eight grade students who had been possible TEOG candidates, 10 branch teachers and 6 academicians to find out how OE and MC were differ from each other in terms of amount of effort requirement that is one of the sub dimensions of affective phenomena. Their tendency about using effort over OE and MC were compared.

The possible metacodes inferred from this research were the amounts of work to be prepared for question format, consistent working to activate effort, concentration of students, the students' reflections of total effort, and persistence even if the formats are hard.

Category 1. Amount of work to be prepared for question format

The following table gives the information about frequency of the category *amount of work to be prepared for question format* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 22.
Amount of work to be prepared for question format

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Working hard	3	8	1	8	2	6
Not working hard	7	2	9	2	4	0

Working hard

The results for this category indicated that three out of ten students expressed that MC make them work hard. Student A was one of the students who forced him to study lot for MC. He said "For instance, I need to study 2-3 days for a verbal test. I also need to study 2-3 days for a numerical test. Why? Because I shouldn't make any mistakes in those question items; therefore, it is important. I shouldn't make any mistake in any word or process."

The examination of students' answers on OE case unlikely the MC case, Table 22 shows that majority of the students (n=8) expressed that OE make them work hard. Student D who was one of the students who forced him to study lot for OE said

> It is certain that I study more comparing to a test. In terms of the questions, I study the topics of verbal courses more. Because interpretation or discovery questions are generally asked in verbal courses. In verbal courses I repeat the topics such as how to find something like a gerundial. Actually, I also generally study the topics in

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numerical courses but I have textbooks with activities. I do activities in math and sciences as the test will consist of free response questions. My grades are lower in numerical courses than in verbal courses; thus, I repeat the topics of verbal courses, so free response questions more than multiple choice questions.

The response pattern of teachers is similar with students' response pattern. Only one teacher thought MC makes the children work hard. This teacher stated "But I think that they have to study just like for a normal exam. They need to understand the topic very well so that they can perform the steps of the topic and reach to the result in multiple choice questions." (Teacher B). The situation is quite opposite when students engaged with OE questions. 8 teachers thought that OE questions make students work harder. For instance Teacher C stated:

> As I said, a bit more. As I always say, 4 or 5 times more. Even if the question items are identical. In fact, math is like that, more effort is needed. As a branch. When analyzed in terms of the question types, it is a little more. Why? Because they have to solve them. Sometimes, they say that they have solved the problem in their head without writing something down. Well, I cannot evaluate that if I can't see what has happened in their head on the paper. Therefore, comparing to multiple choice questions they need to get himself more, actually a few times more, used to the solution....

Only two academicians' view gained similar experiences that MC makes the children work hard. Similar with both teachers and students all of the academicians expressed that OE makes the children work hard. Namely, there is much requirement of performance of the children for OE. An academician said

> To say that, to give a certain amount of time may not be right. Because that changes depending on the course, the level of comprehension, the difficulty of the course, the difficulty of the questions and may more reasons that don't come to my mind right now. Thus, it would not be correct to determine the time for tests but students, particularly those who will take part in the SBS ÖYS exams, need to practice for multiple choice questions. Because they need to face different question types. It is not sufficient to know the topic. (Academician D)

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Academician F indicated over OE:

> Does he need to study? More studying is needed for open-ended questions, logically. Because the fact that he understood it does not guarantee that he can answer the question. Firstly, in open-ended questions the factor of remembering, well, there is not much to remember. Secondly, understanding does not guarantee him to rewrite the text in such a short time.

Not working hard

The examination the category not working hard for all participants shows the followings:

Seven of the student mentioned there is no requirement of much performance for MC because the students can be successful with little performance. Student B who saw 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.

Unlikely to MC case, few students (n=2) mentioned there is no requirement of much performance for OE because the students can be successful with little performance. Student J who saw OE as an easy format said "Actually, it isn't needed but I do it anyway. I do it when needed."

Majority of teachers (n=9) thought said there is no much necessity of performance for MC thanks to familiarity for the format. Yet only 2 teachers through OE questions did not require harder work to perform well. Teacher A expressed

> 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.

For OE, Teacher D's experiences can be added "Well, he needs to have obtained the outcomes of the topic. When I ask a question on the addition of decimal fractions he would need to know the topic and have solved questions related to it. But he wouldn't need to solve questions which are extremely extreme."

Similar with teachers and students views on MC, majority of the academician views (n=4) indicated there is no much requirement of performance of the children for MC. Yet, none of them thought for OE there is no much requirement of performance of the children. Comparatively, an academician said "No, actually I don't think that too much time needs to be spent in that period. I think that it would be enough if they would study their notes and parts of processes deeper one day, one night before the exam…" (Academician A)

Total views indicated that most of the participants shared their opinions about the fact that the eight grade students did not need to work hard for MC before taking the large-scale assessments. All in all, overall results with aforementioned category suggest that OE can make the eighth grade students work harder than MC. Due to the fact that working hard was one of the category of effort, which is an affective dimension, emerged from this study, it can be inferred that OE activates the eighth grade students effort in the affective phenomena.

Category 2. Keep working to activate effort

The following table gives the information about frequency of the category *keep working to activate effort* from each interview participants. The frequencies in the table points out the number of categories stated in relation to

MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 23.
Keep working to activate effort

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Keep working	3	9	2	9	3	5
Not keep working	7	0	8	1	3	1

Keep working

Keep working with forcing themselves to solve any question format regardless of losing the motivation was another indicator of effort. The results analyzed from the students indicated that three students expressed that they needed keep working on MC not to lose effort. The reverse pattern observed when the results of OE analyzed from the students. This pattern indicated that all of the students expressed that they needed keep working on OE. Since some reasons were OE requires no memorization of knowledge, does not throw the children fall into dilemma, contributes to more brain works thanks to open to write, leads to subject studying rather than test solving, good to reflect knowledge and more sentence production and pronunciation. Student G mentioned:

> By the way when you solve a question you can see your mistakes and you study the topics in which you made the mistake and you get better in the these topics. So, for instance, you have a lack of knowledge in a topic, you have to make up for the missing material. To learn by reading is very important, but you also need to have solved a sufficient amount of multiple choice question items.

For OE, it was said by Student F that

> Open-ended questions shows you the difference between you and someone who has come to the same point by eliminating options, because people reach the answer by eliminating the distracters. One can continue with the test by going over the options. But now you are in a blank position and there is nothing that can help you determine your

thought and answer. Therefore, this is something someone who has more knowledge can complete with less difficulty while someone who has memorized all the information or been successful by eliminating options will face more difficulty, so this is actually a test that brings out the success level. In other words, it is a type of test that both leads people to make more mistakes and reveals the level of success. So, constant repetition is already the same thing for all exams.

The teachers experienced similar considerations with the students. Two of them were expressing MC makes the children keep working. The reverse responses were gathered when we examined OE case for teachers. Majority of teachers expressed OE makes the children keep working. Most of the teacher remarked the children needed to keep working. Teacher E expressed "To solve these kinds of questions one needs to solve a lot of questions. I don't know if we are the ones who think that way but more questions need to be answered. Repetition of the topic can be made based on the mistakes in the questions." While for OE one of them said "One needs to know the topic very well as it needs analysis. Therefore, one would need to be detailed and elaborate well. Not too much detailed, though, depending on the topic...One should be able to learn the topic deeper than just superficial." (Teacher G).

For MC, academicians' views did not present a clear cut difference as teachers and students did. Half of the academicians expressed that MC makes the children keep working. Academician C said "I think that if you ask a student an effective multiple choice question the effort of both will be similar." Similarly, five responses of the academicians indicated OE makes the children keep working, "If it is used for the correct goal it will happen so. As I said, if higher level skills, more complicated skills, greater skills, duties that would take more time are asked, yes, that will happen." (Academician B)

Not keep working

The examination for not keep working hard category for students, teachers and academicians discussed in the below.

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Seven students thought MC did not require a continuous study. Yet, none of the students thought OE did not require a continuous study. The possible reasons MC did not require harder work were; the students should study more on the subject rather than format, MC does not allow examinees to allow reflecting an individual comment and knowledge given in MC question help them to solve easily as a clue. Student H mentioned that he did not necessitate keeping work with much performance. He said on this comment: "As I mentioned before, even if one doesn't know the answer one may remember the information once looking at the question. This may help one to solve the question. So, in my opinion one doesn't need to study much for multiple choice questions."

All of the teachers except two said they did not keep working for MC by losing their effort. Most of the teacher remarked the children did not need to keep working. Teacher J expressed

> One doesn't need to think that much. How should I answer the question clearly? Questions open to interpretation are rare. After all, asking such a question is difficult, it isn't easy. To think to find the answer is difficult. There is nothing to change. The answer is clear. As clear as two and two is four but religion is different.

Similarly to students' views on OE only one teacher said they did not keep working for OE by losing their effort. This teacher 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…" (Teacher F).

Academicians' views were balanced in the case of MC. 50% of the academicians explained they had experienced that the students did not force themselves to keep working on MC. Yet, for OE only one view indicated based on their experiences that the students did not force themselves to keep working on OE. These views of academicians parallel with both students and teachers. One academician explained his thought as "When analyzed in terms of effort

spend multiple choice question doesn't make one spend much effort. But as I said it all depends on the question type, because challenging multiple choice questions can be written. A multiple choice question with very logical distracters can be written." (Academician E). Comparatively, "May be. It may happen. In the end, I have seen so many superficial open-ended questions. I asked myself why open-ended questions are needed for this and that this question could be changed to the cloze format", as stated by Academician C.

The reasons were arranged by the teachers and the academicians that OE provides using different method and process, relating between topics and facts, more calculation steps for children, more dimension to solutions. Total views indicated that most of the participants shared their opinions about the fact that the eight grade students did not keep working much for MC before taking the large-scale assessments. Specifically, the reasons were arranged by the students MC format did not require studying subject of the branch, not allowing doing comment and knowledge in one question help to solve the other one. The reasons were arranged by the teachers that the children mostly tend to select appropriate choice, solve MC automatically, select randomly, chance factor, the children become accustomed to use this format due to large-scale assessments. Interestingly it was highlighted that concept comprehension became the secondary issue and so the students began to study not only for the subject but also the format tactics.

All in all, overall results with aforementioned category suggest that OE made the eighth grade students keep working more than MC. Due to the fact that keep working was one of the category of effort, which is an affective dimension, emerged from this study, it can be inferred that OE activate the eighth grade students effort in the affective phenomena in terms of this strategy.

Category 3. Concentration of students

The following table gives the information about frequency of the category *concentration of students* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 24.
Concentration of students

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Concentration as hard as they can	9	7	9	9	6	6
No concentration	1	3	1	1	0	0

Concentration as hard as they can

Concentration was one of the requirements to make the students show their effort that is one of the affective characteristics. The results indicated that majority of the students (n=9) except one explained that they should concentrate on the question root in MC. For instance, a student mentioned, "To focus is very important. If we focus, we can solve it much easier and; therefore, the probability of finding the correct answer increases…We need to focus on the question root." (Student A). Also another one, Student B added "Definitely question root. Answers are not my concern at the beginning. I answer the question, I look at the options whether my answer is there and if not, I start from the beginning." One student thought they should focus on the choices rather than root during examination. On the other hand, Student J who was the only proponent of choices said: "Sometimes one may misunderstand the question. You answer it accordingly. I think that one needs to concentrate. I stop more. I try to have a better look at it." The results on the issue of students'

concentration of OE indicated that seven student explained that they could concentrate on OE by spending full effort. For instance,

> I think there is a need because however much you focus, solving the question makes the understanding of the question easier and reaching the answer will get easier, too. I think that thinking about the situation is needed. I think that it is already the basis of the problem. If we can understand the basis we can also find ways to answer the questions correctly. I think that the better we understand the basis of a question the better we can solve the question. (Student H)

Same response pattern gathered when we examined teachers' views. Similarly to students' views, nine of the teachers experienced the students can concentrate easily on OE and MC questions. On MC, Teacher I remarked,

> I think that it is needed. I think that all question types need it. To be careful is important, of course. Yes, it doesn't change. The student should focus and concentrate on everything because the selection of the wrong option is possible in all question types when he is not careful. We have a lot of students who fail to answer the question correctly because of lack of attention even though he may know the answer very well. Particularly in the last years students face lack of attention. After talking with their parents, they say "my child has a problem concerning lack of attention" but after seeing an expert, the expectation just confirms the diagnosis.

On OE, "When solving one needs to think. Both when reading and concentrating and also while solving the problem and expressing one's feelings." said Teacher G.

Examination of the academician responses provides a homogenous pattern unlikely to teachers and students. All of the academicians expressed that both MC and OE required the students' concentration as much as. Academician C explained "…In the end, a student needs to focus in order to correctly answer the question whatever type the question might be. In other words, he needs to concentrate. He needs to focus on the question root and the distracters…." Another academician said over OE, "Yes, it would be needed if the open-ended questions are used for the aim, so for the evaluation of complex

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skills. As I said, if the aim of well-written multiple choice questions is high success of students, both would be of need of similar concentration levels." (Academician B).

No concentration

Similar with MC but a few more, three of the students thought they could not concentrate on question root when they presented with OE. Student G who was one of the proponents of spending much effort on question part in an OE format said

> Of course, concentration is needed but I don't think that it would be as much as for multiple-choice questions because this problem arises. Multiple choices are generally more positive. For instance the options, Paragraph options in verbal courses require quite a lot of concentration. However, in open-ended questions one focuses on the answer after reading the question. If you have understood the question you concentrate on the answer and try to find the answer. Therefore, I think that it requires less concentration.

Same with students' views, only one teacher said students cannot concentrate on MC during solution process. Teacher E expressed "It is not needed. Due to the large number of questions and the notion that multiple choice questions are competitions, the motivation of children needs to be high." Examination of teachers' views did not differ in OE questions compared to MC. Only one teacher said they cannot concentrate on problem part or thinking process of solution step on OE. Teacher A expressed, "I don't think so, maybe one could share his idea directly. Therefore, it is not needed. Yes, there will be no problems in terms of the understanding of the question. Anyway, open-ended questions are very clear…"

For teachers and students, a few of them still thought for both MC and OE formats there is no need to put more effort to concentrate on the question. But none of the academician thought in this way. They think both MC and OE did require concentration.

Total views indicated that most of the participants shared their opinions about the fact that the eight grade students could concentrate much on OE during solution process. Mainly, the participants arrived at consensus that the students mostly tend to concentration on the problem root of OE which means that their effort was spent on the question root. Total views indicated that most of the participants shared their opinions about the fact that the eight grade students concentrated much on MC during solution process. Seven of teachers' views added that the students should concentrate on question root and two of them said both the question root and choices should be focused. In addition one academician view thought the concentration was on the question root, one of them indicated it was on the choices and four of them indicated it was on both the root and the choices.

All in all, overall results with aforementioned category suggest that MC may trigger to provide the eighth grade students concentration more than OE. Due to the fact that concentration was one of the categories of effort, which is an affective dimension, emerged from this study; it can be inferred that MC activate the eighth grade students' effort in the affective phenomena in terms of this strategy.

Category 4. Students' reflection of total effort

The following table gives the information about frequency of the category *students' reflection of total effort* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

Table 25.
Students' reflection of total effort

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Much effort	4	8	2	8	4	5
Low effort	6	2	8	2	2	1

Much effort

Total effort category pointed out whether or not the students can reflect their all effort and knowledge in MC. In addition, the fact that whether or not most of the objectives in all Bloom's Taxonomy levels can be measured by MC was considered. The results indicated that two fifth of the eight graders agreed with the idea that they can show better their effort with MC. Student D said their agreement as:

> Comparing to the free writing, I may reflect my total effort better… After reading a couple of times I speed up because it comes all back to me. Or I just pass the question but it stays in my mind. After a while I say, "Aaa, that's the right answer" and go back to mark and continue with the other questions. Well, after a while something happens.

Also another student added that:

> I can spend all my effort but someone else who studies less than me but uses the technique of elimination of options may achieve the same results as I did. It somehow shows the real success but nothing is certain, as it is not one's own thoughts but answers which are already written. Because the answers are stated in front of you and the 25% chance that one may get the question correct in multiple choice questions, people may just guess and this may lead to correct answers even though we may not be certain about the correctness. (Student F)

Moreover, when whether or not the students could reflect their all knowledge and use them in the OE was taken into consideration, the results showed four fifth of the students indicated they can reflect their knowledge and use the skills such as writing and expression ability, transferring of knowledge…etc. by stressing as "I think that I can reflect my total effort better

in open-ended questions because not all topics are tested with multiple choice questions. But in open-ended questions I write twice as much just in case. Let's say the teacher asks me one thing, and I add more content to my answer."

As following the idea of the students, one fifth of the participant teachers were also indicated that the students can show their full effort by reflecting whatever they learned in the lessons and using their ability to push themselves in order to overwhelm with a difficult question. "For instance, if a student, a good student, has repeated the topics and solved two tests on it, this will help reinforce students' knowledge…." said Teacher A.

Also exactly the same number of the teachers' views parallel with the students, four-fifths, remarked that the students could transfer all knowledge by using quite a lot of effort. On this issue over OE,

> ... They cannot write long responses to open-ended questions. But still they are trying to write. Expressing oneself is easier. The students say that the papers given aren't enough. They say there is not enough place. Actually, we arrange these. And we try not make them notice. If the answer is long we give them a specific amount of place, or if the answer is short we give them more place so that it will look like a long answer. We try to limit them…. shared Teacher J his experiences.

Unlikely, the academicians had different views rather than the students and teachers by disagreeing with them. Two third of them observed the students could reflect their all knowledge about the target subject likewise Academician E said

> "Based on how you prepare them 'why not?' ". Is it possible to measure in all stages such as knowledge, analysis, and syntheses? I am not sure about the highest two stages. But in the others questions can be prepared. For the highest two stages there are possibilities but are they limited? Maybe.

About OE format, correspondingly, five sixth of the academicians shared positive views on the side of OE by indicating of Academician B

If written well, open-ended questions are a good chance to see what students know. But what happens most of the time is this: students when asked a multiple choice question of a lower stage or a cognitive sub stage choose from a range of possibly correct answers. But when asked questions such as "explain this. Tell us. Tell the relation of these two concepts" students may choose the correct answer if written as a multiple choice question but they may not be able to write it down. Do we give the student a chance? Yes, I think you gave them a chance, but students writing skills of not only 8th graders but also undergraduate students are low because they cannot think clear because they got used to "This is good, this is bad. This is great, this is awful." Their perspective of the world is so two-categorical that this is the reason why they continued with multiple-choice questions. They got used to "Should we say 3 or 5? This good, this bad. This great, this awful". Because they always think that way there is no youth with clear truth in their eyes…

Student C does also not agree with the idea that MC helps them show all effort. He said:

It is not very pleasant to know that someone who uses the technique or logic can reach to the correct answer in multiple choice questions no matter how much I know on the topic. But in open-ended questions we see the advantage of knowing the topic with all its content.

Low effort

Interestingly, most of the learners such as three fifth of them remarked they cannot reflect their total effort with MC. Few of them, one fifths, remarked OE could not help them to measure all the objectives the lesson suggested as "…There is no such chance with free- writing questions. More precisely, one needs to answer or leave it blank" by Student F.

Nonetheless four fifth of the teachers remarked MC could not measure all ability and all knowledge of the students. For instance, one of the teachers remarked "It might be but there would be deficiencies in terms of interpretation. I think that there will be problems in the stages of analysis, syntheses and evaluation. Yes, we can say that it is insufficient in measuring in terms of interpretation. So, they may not measure it as in open-ended questions…." (Teacher I) but one fifth of them expressed OE could not provide

the eighth graders a format to make use of all ability and knowledge because of the fact that OE measures limited constructs.

> To measure all efforts and performance... As I said there is also speaking in English. In order to test the speaking performance one needs to make speaking exams. That is a different performance. But what do we test in open-ended questions? We test grammar knowledge, reading comprehension and whether they can build a sentence. These are what we test but we cannot test speaking. Speaking can be tested only by speaking. Can he express himself? Let's say that I can test their daily routine with dialogues in the lesson. I say "tell me your daily routine" for instance. How would you tell it? What do you do in one day? This can only be done with dialogues during lessons. But I can test it in a written exam with one written question concerning whether he can express himself, answer the question. Expressing oneself by talking or understanding what I say is a different thing. (Teacher H)

One third of the academicians disagreed with that MC help the children use much effort to handle with the question by talking

> No. Multiple-choice questions consist of the disadvantages that were mentioned before. We said that they cannot measure high level cognitive skills. It may lead to unfamiliarity of the question, not understanding the question or sliding questions, lack of attention even though he may know the topic. And because of exams such as SBS, ÖYS and YGS the number of question items need to be high. You cannot do measurements with a small number of questions. It is claimed that even in summative exams there needs to be at least 20 questions…. (Academician D)

Another instructor added as the following comment

> In my opinion they cannot reflect the effort. It is not possible for me as a teacher to see the effort of a student spend on a course with one written exam. These measurements will be limited. It would be a problem if I only do a product-oriented evaluation. But if I follow the students and see what has been learned how much and ask in the first exam for instance concept questions or express-yourself questions and see that he has problems and see that in the second exam that the student has fixed the problem then I would be able to say that he has started to spend effort. I can observe that. But if I don't use the exam for this purpose and give the exam, evaluate and give a mark as in a mechanical process the student has no chance to show his effort. In

other words, it is not possible to see how much is learned, internalized and absorbed. (Academician C)

Whereas one sixth of them shared according to their experiences that the students cannot always show their effort much during solution process of OE. Academician F, for instance, said

> Thoroughly, yes, but it is not possible to ask 40 open-ended questions, so specifically, yes, but no in terms of general scope. If one asked "Does the student know everything? Has he studied for it? Does he have an idea or knowledge" multiple-choice questions may be useful but if one focuses on whether they have actually thought about it or whether they have truly understood it then open-ended questions.

Total views indicated that most of the participants shared their opinions about the fact that the eight grade students did not use their effort much on MC during solution process. All in all, overall results with aforementioned category suggest that OE may help the eighth grade students reflect total effort more than MC format. It can be highlighted that most of the objectives of any lesson can be measured by OE. Thanks to being able to reflection of total effort was one of the category of effort, which is an affective dimension, emerged from this study, it can be inferred that OE can be one of the supplier to activate the eighth grade students effort in the affective phenomena in terms of this strategy.

Category 5. Not giving up even if the formats are hard

The following table gives the information about frequency of the category *not giving up even if the formats are hard* from each interview participants. The frequencies in the table points out the number of categories stated in relation to MC and OE, not the number of participants. Namely, the fact that how many people were told the category only once was depicted.

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Table 26.
Not giving up even if the formats are hard

	Student		Teacher		Academician	
	MC	OE	MC	OE	MC	OE
Students' effort: give up easily	3	4	4	3	2	4
Students' effort: persistency	7	6	6	7	3	2

Students' effort: give up easily

Not give up easily on a duty is another effort-determined skill. The students who have high effort, does not give up when he strive for a difficult question. Therefore, this category pointed out whether or not the students stop to solve the MC which is hard to handle or MC make them renounce as a question format. Three-tenths of the students experienced that MC makes them give up easily and cannot skip to the other questions in the exam because of the fact that the difficult one takes up their minds. Student D highlighted,

> Actually, I cannot do it. If I cannot solve a question, it stays in my mind even though I may have already spent 5-10 minutes on it. I become upset thinking that I couldn't do it. I think that I have lost 5 points and that I am not sure of the rest 95 points. I calculate my points and my grade and I become upset which causes me to mark any of the options. My total points are low.

When the theme *effort*, an affective dimension, was taken into consideration with regard to OE, two fifth of the students experienced that OE makes them give up easily and cannot skip to the other questions in the exam because of the fact that the difficult affects their energy and motivation. Student H highlighted

> Well, I think harder. I would spend more effort on questions I couldn't understand comparing to multiple-choice questions. I spend more time on free-writing questions. While thinking of the question one doesn't realize the time passing. While thinking of the question one may forget about the other questions. One may not be able to leave the question. Because there are no options we need to think as we do it on our own. If we don't know the answer there is no need to force ourselves.

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Because we don't know the answer and there are no options given we shouldn't spend too much time on the question. We should pass to the other questions.

According to the teachers experiences, two fifth of them mentioned the children can easily give up during the solution process of MC in a large scale assessment. Generally they could not to keep their effort strong and to skip the difficult question without losing their motivation. The concept was remarked as

> …Let's say that we have asked the first question. The student may get anxious that the other questions may be the similar but I think that this anxiety will go away as they will see that the second and third question is easy. He shouldn't have this thought. But there might be people who have this idea. There may be a loss of motivation. (Teacher J)

According to the teachers experiences, three tenth of them mentioned the students easily give up during the solution process of OE. They could not skip the difficult question without losing their motivation that was pointed out by Teacher G "Yes, this may be a bad result for open-ended questions. Well, a student may just say that he cannot do it and leave it. The failure of one may decrease the motivation of the others…."

Likewise, the academicians stressed similar findings thanks to their experiences. Two fifth of them believed the children could easily stop to solve a question when they faced with a hard one. Academician A pointed out,

> How is it going to be in multiple choice questions? He couldn't do it and there are many questions left and lost a lot of time. We have all experienced this stress with exams such as ÖSS. "I shouldn't spend too much time". If spend "Jesus Christ, I have lost 5 minutes" To spend too much time on a question and the limited time have always been a factor of anxiety. This happens more in multiple choice questions. Sometimes they stick to a question, lose time, couldn't find the answer and there are other questions that need to be solved. This increases the level of anxiety and worry and affects the cognitive skills in the other questions and lowers the performance. Even though they may be able to do it, they may not be able to show their full performance in the left questions.

Albeit, the academicians highlighted dissimilar findings thanks to their experiences on OE. Two third of them experienced the children could easily stop to solve an OE question when they faced with a hard one. Academician D said that "As far as I have seen they give in very early. Well, they give in once seeing that they will not reach a solution. They generally leave it blank. If it is a numerical question they leave it blank. But if it is a verbal question they write anything just in case the teacher may give some points."

Students' effort: persistency

Whereas seven tenth of the children experienced MC did not let them stuck up with the difficult question. They believed that this format did not force to trigger any motivation or energy decrease. Also it did not cause forget the current knowledge about the subject. Student H shared his experience

> I think there might not be many because the answer of some questions may be in the options or in the information given. I think that one shouldn't lose motivation. The other questions should be looked at, too. The information given may be the answer to the question before. One shouldn't get desperate right away. If the question gets difficult for me I look for the answer in the other questions. I would do that if I stick to a question.

Whereas most of the children, three fifths, experienced OE did not let them stuck up with the difficult question. They believed that this format did not force to trigger any motivation decrease. Also it did not cause forget the current knowledge about the subject. They explained according to their experiences that they could not give negative feedback to themselves and just skip the difficult question by keeping themselves to feel strong. For instance, Student G stated

> I don't forget the information but what happens is this. For instance, I have no idea when I read the question because if I have no idea I don't have to spend so much time on the question as I have no idea and no clue. Therefore, I pass to the next questions. Once having solved all the

questions I go back to the unsolved question as I now have an idea of the question and the topic as they are related. I try to solve the question by analyzing the question. My work gets easier that way.

Most of the teachers, three fifths, however shared their observation that the students had higher tendency not to give up easily on MC. "I don't think so. It may happen if one encounters such a question several times but I don't think that that would happen with one or two questions." stated by Teacher I can be given as an exemplar point. As well, Teacher H added,

A student is supposed to continue to the next question when he cannot solve a question. He tries to solve the question again if he has enough time because if he spends too much time on one question, time is important here. But sticking to a question is not good. If he sticks he will lose time. As a result, he needs to leave the question and continue to the others immediately.

As similar with the students' views, all of the teachers, except three, shared their experiences that the students had higher tendency not to give up easily on OE because they could use the easiness of writing their idea, knowledge, explanations or drawings. The following comment on experiences can be given by Teacher I:

I think that they would come back. I think that they would come back to the open-ended questions because of the importance to time limitation. A lot of students do that, they come back to the questions. The leave it blank. I think that that coming back may happen more with open-ended questions. They turn back more often.

Also similar issue asserted by another Teacher:

They do not stick. They solve what they can and that's it. If the student doesn't understand the information from the course and if he doesn't get any additional help, it is more difficult for him. If there is no one in the house who knows English, he may not be able to be successful if there is no one who may care for him. Therefore, the student does as much as he can. (Teacher H)

Whilst three-fifths of the instructors said the students could not lose their performance or energy for the following questions of MC when they stuck with a difficult one. An academician shared his experience as by saying

…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)

Although one third of them said the students could not lose their performance or energy for the following questions of OE when they were stuck on a difficult one during the process of the exam. Another academician shared her experience and observation by stating "As I said, multiple choice questions affect more because of various reasons... Open-ended questions may provide confidence by stating that "I couldn't do it, I have lost too many points but I can solve the other questions". I don't know. It may depend on the student." (Academician A)

Total views indicated that most of the participants shared their opinions about the fact that the eight grade students did not give up easily on MC during solution process even if the question they was hard enough to make them lose motivation or energy. In addition it was also that most of the participants shared their opinions about the fact that the eight grade students did not give up on OE during solution process. All in all, overall results with aforementioned category suggest that OE could make the eighth graders give up from reading the question part again or the solution easier than MC format. It can be highlighted that sometimes length of OE can force them get lost in the exam. Instead, they should not give up even if the question was hard to solve by keeping effort strong. Giving up strategy was one of the categories of effort, which is an affective dimension, emerged from this study, it can be inferred that OE could not activate the eight-grade students' effort in the affective phenomena in terms of this strategy.

In addition to above actual interview, focus group interview process indicated similar perceptions with the branch teachers. About the effort theme, focus group teacher shared a common point that the students did not tend to keep working during solution, no concentration on MC. They cannot reflect their total effort with only this format even if they cannot decide on whether it requires much effort or not. Also the participants did not share any idea about whether the children give up or not during solution of difficult MC question they faced with. During solution of OE, the eight-grade students try to work hard and keep their workings on OE instead of MC. Nevertheless in both formats they can concentrate on as best as they can during solution process. All of the teachers believed that MC format is not enough to make the children show their total effort over their knowledge. Even though most of the learners are apt to give up when they are faced with difficulty in MC solution process, only a mathematics teacher stressed the children do not want to give up easily thanks to nature of mathematics. They prefer to go over the question root or solution process. While reading question root and choices they try to find the faults embedded in the solution.

CHAPTER V

CONCLUSION AND RECOMMENDATION

This study investigated the main research question: "What are the perceptions about MC and OE related to metacognition and affect for middle school students, according to students', teachers' and academicians' point of views?." It showed that OE question format may activate the eighth grade students' cognitive and self-checking strategies more than MC according to students, teachers and academicians' perspectives. Foundations emerged from the research based on the experiences of the students, teachers and academicians on MC and OE question formats are presented as follows: 1) the students prefer to use their own constructed responses or solution steps during OE; 2) higher number of different cognitive strategies are used; 3) the children have a re-wording tendency through the problem root; 4) they spend more time to understand the question and 5) they prefer re-reading the question or solution steps. In addition, common perceptions of the participants justified that the learners: 1) check their work comparatively more 2) go over their solution steps or answer choices equally in both MC and OE; 3) judge their correctness of the solution; 4) consciously ask themselves how well they are doing; 5) tend to find and correct their errors more; and 6) remind themselves to stay on track. It can be remarked that OE may promote metacognition of children more than MC about cognitive strategy and self-checking skill.
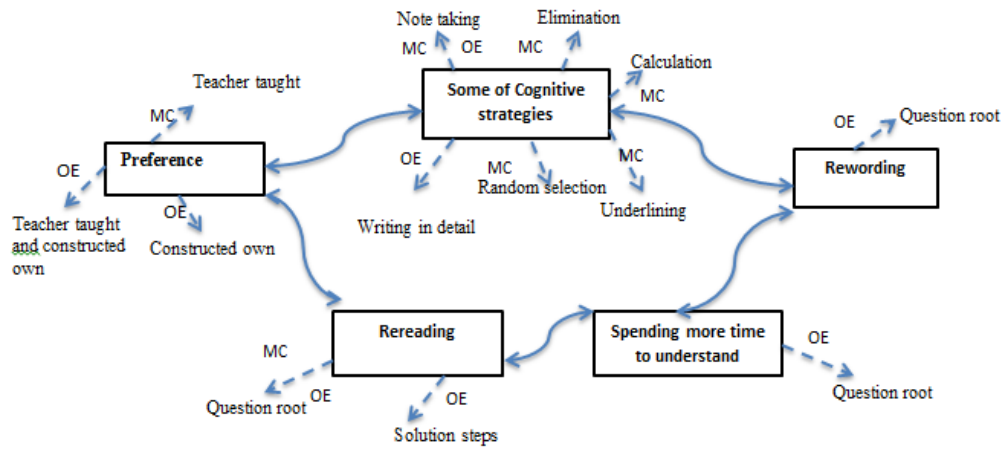
Figure 3. Results of the Theme Cognitive Strategy in terms of MC and OE
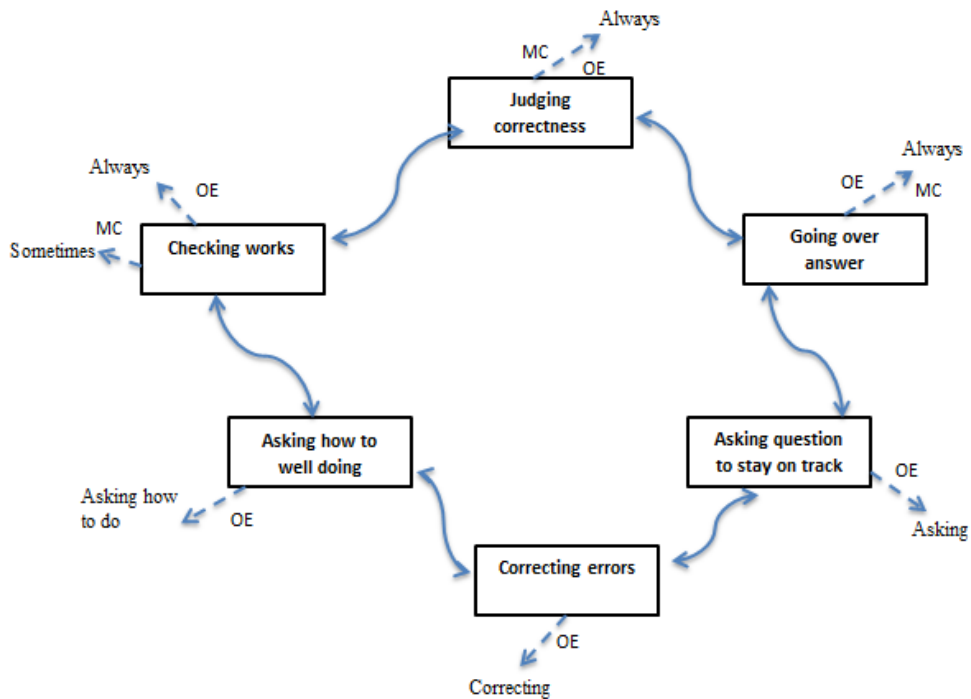

Figure 4. Results of the Theme Self-Checking in terms of MC and OE

Moreover, in terms of worry and effort, the study showed that both OE and MC may initiate worry over the students equally. The formats presented that: 1) MC may increase the number of negative feelings; 2) feelings of disappointment and regret are intense in MC, on the other hand, 3) the amount of regret to say

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they wish they would study more is higher on OE; 4) feeling unhappy is observed both with MC and OE; 5) having concerns about performing poorly during the examination is identical; 6) having low self-esteem and 7) feelings of discomfort seem to be higher on OE. However, when these findings are combined with the focus group interview, it may be seen that the trend is on the side of MC in terms of worry. The participants tend to agree that MC may trigger feelings of worry more than OE. On the other hand, in terms of effort, the study showed that the students try to 1) work hard and 2) keep working on OE; whereas 3) concentrate as best as they can on MC more easily; 4) make a great effort and reflect their knowledge on OE, but 5) not to give up easily on MC in order to sustain their effort. When overall dimensions are examined, it is highlighted that OE may activate effort, which is a kind of affective construct, more than MC.
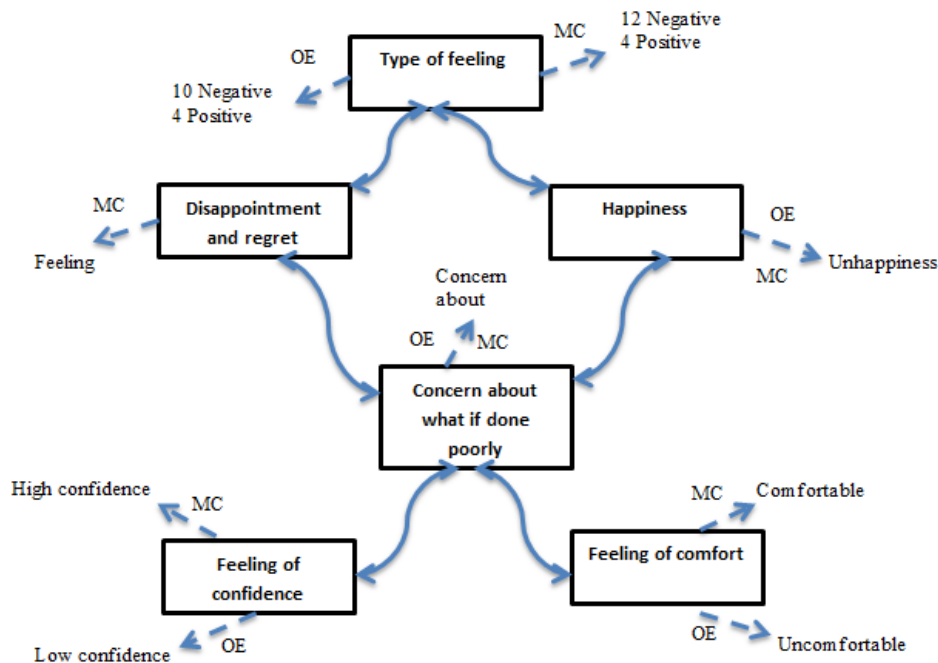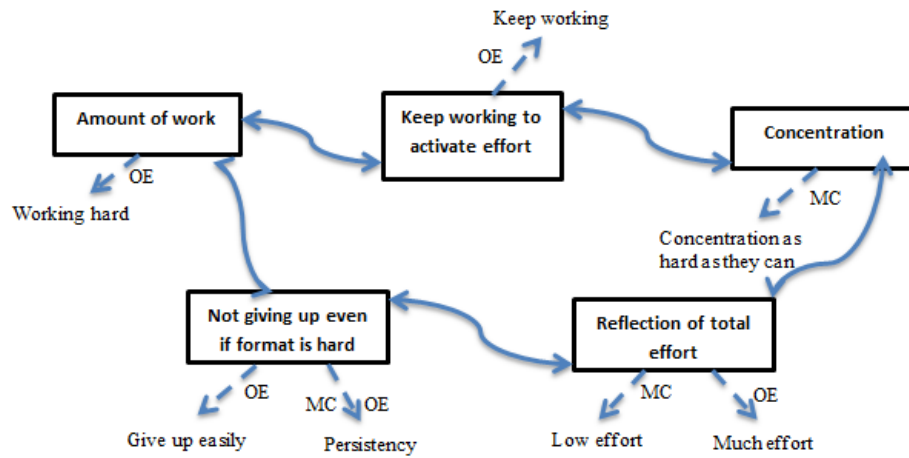

Figure 5. Results of the Theme Worry in terms of MC and OE

Figure 6. Results of the Theme Effort in terms of MC and OE

That is to say, this research aimed to focus on the fact that OE format can promote cognitive strategy, self-checking and effort more than MC, but MC can contribute to feelings of worry more than OE; and contribute indirectly to metacognition and affect. According to philosophy and approach of this research, the quality of the past experiences rather than the quantity of them was taken into consideration. In this respect, even if it is shown in different studies that OE triggers feeling worry of the learners, this study puts emphasis on the eighth graders' tendencies to feel more worried about MC than OE. This situation can be explained in terms of the fact that the question format has been used in large-scale assessments e.g. standardized examinations in Turkey.

The findings of the study were analyzed in the aforementioned section in terms of themes and codes emerged during the cognitive interviews with the students and then, they were triangulated by the views of teachers and academicians. The discussion of the findings is based on these themes and codes. The results of this research can also be founded in its predecessors through the related literature.

Some studies on the research field indicated similar views that MC has a scoring rule as follows: when the wrong answer is selected, points are lost and

any single item can be viewed as a lottery. The solution can be attempted to numerically or random selection rather than being analytical (Espinosa & Gardeazabal, 2010). So, MC format could not be inferred as an orchestration of cognitive process to achieve cognitive goals (Phakiti, 2003) with respect to proposed dimensions of cognitive strategy theme in this study.

There are also some studies that show there is no consensus about whether MC and OE are equally suitable for measuring the students' knowledge. OE is more reliable due to the fact that it does not lead to elimination tendencies by the students and it adopts a minimal guessing approach. MC can be influenced by questions and answers which might contribute to cueing. High marks due to lucky guessing are possible. MC is seen as testing of isolated fragment of knowledge and it is already believed that it is not suitable for testing high-level thinking of real world content (Kastner & Stangl, 2011; Lawrenz, Huffman & Welch, 2000). In one different aspect, Rodriguez (2003) worked on 67 meta-analysis studies, which were resulted in the fact MC, and OE is not equal and measure different constructs. However, remembering, understanding, applying and analyzing level of knowledge can be measured by both of them. Based on the findings of cognitive strategy types on MC context, elimination was found to be a top strategy. Nonetheless, in the context of OE, crosschecking and making an inference during solution were considered to be a top strategy that was related with the views of Espinosa and Gardeazabal (2010) and Kastner and Stangl (2011). Furthermore, Cheng (2004) came up with a finding that the participants had significantly performed better in the selected response format type of questions than in constructed response questions due to participants' guessing by matching words as keyword writing is one of the top five cognitive strategies for MC. the findings are supported based on the aforementioned perspectives.

Moreover, Friborg and Rosenvinge (2013) had researched with 643 participants between the ages of 25-50 in Norway about the benefits of OE on the standardized tests in terms of cognitive strategies and affective symptoms.

The research highlighted that OE which was included at the end of MC provided wide and in-depth information about the behaviors of the learners. The learners began to reflect increase of their understanding even if MC settled at the end of the beginning of standardized exam, interestingly, provided relevant context how to respond OE settled at the end. Spending time to understand is another aspect emphasized in this research. An approximately similar dimension was found in Friborg and Rosenvinge (2013)'s study whereas in that case, the finding was obtained from a quantitative data. Also the ages of the participants were not related with this research including eighth grade students between the ages of 13 and 14, as well as teachers and academicians. Additionally, there was another study in which 153 university students participated as testees about the difference between stem group and stem-option group on metacognition of reading comprehension. It was asserted that stem can contribute the testees to apply metacognition and metacognitive strategy usage more (Tabrizi & Vafakhah, 2014). However, participants were different and focus was too narrow which is different from the current research. There are many studies which can be determined as proponents of metacognition aspects such as cognitive functioning (Hill & Hannafin, 1996; Land, 2000; Roebers, 2006; Segedy, Kinnebrew & Biswas, 2011; Wilson & Hughes, 2011).

A very recent study conducted by Özuru, Briner, Kurby and McNamara (2013) about how to measure text comprehension and learning in educational settings by MC and OE was published. They aimed to understand the nature of the difference between MC and OE in terms of how to assess the comprehension differently. Two versions of the same question were used. MC was found to have inside automatic retrieval knowledge because of the target information. The target information can be selected from one of the questions or choices. The study showed rich cues resulted in successful identification of true answer amongst choices regardless of active memory comprehension. On the other hand, OE was found to be seen as providing limited information of cues.

According to self-checking context, Özuru et. al. (2013) indicated OE promoted active usage of self-explanation reinforcement for the readers who were engaged in texts. Self-explanation was found to be higher in OE than MC. This result also supported the recent research on self-checking skills such as checking work, judging correctness, asking how well doing, correcting errors and awareness of self-control to stay on track can be observed more often in OE format. Also, the current study indicated that OE activates self-checking, especially correcting error skills more than MC. This result overlaps with the Bridgeman's (1992) study. He revealed striking difference between MC and OE, in which items that are relatively easier in MC are considered by the students to be relatively more difficult in OE. Fortunately, it was exposed that format effect of OE and MC was quite high in terms of correcting error skills. MC was not considered to accurately reflect the errors made by the students. This result was consistent with one of the dimensions of self-checking theme in this current research. However, the results obtained by Bridgeman (1992) was gathered from 364 volunteer participants who had taken the Graduate Record Examination (GRE) whilst the current research was conducted on 10 eighth grade students and a total of 26 participants qualitatively. In addition, Nathan (2000) and Segedy, Kinnebrew and Biswas (2011) pointed out self-regulated metacognitive strategies, which corresponds to "going over answers", "judging correctness", "asking himself/herself how well doing" behaviors in this research, empower the students to take control of their learning.

Roeber (2006) pointed out that OE motivates powerful strategic decisions. According to the verified conclusions from 142 participants from experimental research, they could control the sensitivity better in OE and monitor the correctness of their given answers. That's to say, the testees could judge the correctness of their solution better in more adequately over OE. The findings of the current study are supported by the perspective of judging correctness and correcting errors skills of self-checking skills on the side of OE.

Cassady and Johnson (2001) worked on cognitive test anxiety such as worry over 168 undergraduate educational sciences students. In this study worry was also considered as consequence of failure of the students. Also Hong (1999) stressed that worry was a cognitive attentive view about test taking and performance. In Hong's study, worry has been found to be a reaction of emotional distress which is in accordance with the present study, as most of the participants of this current research described worry as exam stress which had been top coding. Birenbaum and Pinku (1997) declared that test anxiety construct has two dimensions such as worry, which is a cognitive component and emotionality. It means that people's own perception of a degree of a threat is related to their sense of capability to an event. Worry was related to a low level of confidence, and a feeling of unpreparedness for tests as well as a loss of self-esteem. Also the results present some supports for cognitive explanation of performance deficits of the students. Interestingly, the study showed that worry can be caused by thinking of parents. Females had showed more anxiety than males over tests. Some of these concepts are also yielded from the current study as a category. Surprisingly, some of the students had shared their experience by mentioning relation between how to solve question format and the effect of their parent.

Moreover, there also another writings from thesis or journals that have focused on affective aspects of differential effect of OE and MC question format (Krueger, 1999; Meijer, 2001; Nathan, 2000; Wilson & Hughes, 2011). In Meijer's study (2001) it was explained that cognitive processes cannot be observed easily under worrisome conditions. A longitudinal 9-month study with 14-17 years 3rd grade, secondary-school, 136 students as participants indicated lack of confidence related with negative mathematics performance. Whether students have confidence was inquired in this study under the heading of one of the dimensions of worry category. This also consistent with the study of Wilson and Hughes (2011) who worked on 57 young children in terms of focus participants of the novice research including 8th grade learners. It was stated that

metacognitive beliefs are well established by 13 years old children and worry inversely related with problem solving confidence. However, this is not consistent with the current research emerged that feeling confidence and feeling comfort seem to be low in OE format while examination.

Lastly, the findings of Hlasny (2014) who studied on time, attitude and performance on MC format had focused on how much time children spend on the exam and whether they review the answers before finishing the exam. Its three-angled focus was consistent with the intended purpose of this research. The results indicated that MC required children to check answers more often and they tend to re-read the questions or choices before answering. Also, the students spent more time checking the answers whereas they spent less time to comprehend the questions. On the contrary, this current thesis took a step to show that the eighth grade children tend to spend time understanding OE, to give importance for checking their answers equally over MC and OE and for re-reading while solving an OE. Therefore, in these perspectives, the two studies are on the counterpart of the dimensions with regard to differential effect of OE and MC.

Previous studies have generally found that both OE and MC have advantages and disadvantages with regards to measuring different constructs according to their respective contexts. The current research was extended the works performed recently in differential effects of two popular question formats such as OE and MC. Some results of this thesis reaffirm the findings in previous studies in terms of some aspects but only partially. The study conducted by O'Neil and Brown (1998) was the only study which included all four dimensions as cognitive strategy, self-checking, worry and effort. While this study indicated that OE promoted more cognitive strategy, less self-checking and greater worry than MC, current research matched with this study only about findings of cognitive strategy dimension because it was found that OE may necessitate more self-checking but may create less worry than MC. On the contrary, O'Neil and

Brown (1998) had found equality of MC and OE about effort, and current research showed OE may require more effort than MC. It can be inferred that the current research tried to fill this gap in the literature by collective data from natural setting qualitatively while O'Neil and Brown functioned as a quantitative counterpart. By courtesy of the dimensions specified herein, the primary objective in this context is to present this rigorous study to Turkey and provide an insight for the discussions containing considerable dilemma about the examination system in Turkey.

Assessment is central to improvement for teaching and learning process that provides present information about the gap between what the learners need to know and what they currently know. Therefore, it is vital for education because at the end of an assessment process- e.g. standardized examinations or large-scale assessments- suggestions for changes in teaching and learning design, curricula or national examinations can be taken into considerations. Millions of students globally take the exam in MC every year and the omnipresence of MC becomes important part of national and international movements to make the schools responsible for the children's learning achievements (Hlasny, 2014)

The standardized examinations in Turkey are generally prepared as MC. On the other hand, some popular assessments such as TIMSS, PISA…etc. are in the form of OE because OE supplies MC with the feature of measuring higher level abilities or skills which cannot be evaluated by MC and providing the testees to show their performance and effort.

There are some related goals for the current investigation. The main purpose of this study was to explore the differential effects of MC and OE in terms of two main constructs as metacognition and affect as well as their four dimensions such as cognitive strategy, self-checking, worry and effort in order to provide an inside for the ongoing discussions in Turkey about the desired change

of standardized examinations (i.e. TEOG). However, this change was suggested regardless of any scientific foundations.

First of all, in this research in Chapter 1, an introduction was written and the reason of the study was explained. In Chapter 2, the literature was divided into some categories. For example, historical background of usage of MC and OE, strength and weaknesses of them, metacognition and affect, and relation between them, categorization of metacognition as cognitive strategy and self-checking, categorization of affect as effort and worry, and appropriateness of MC or OE in large scale assessments were mentioned in the related literature. In chapter 3, method part was discussed. Research design, its philosophy, participants, data gathering procedure, pilot study and data storage method were proposed in detail. Also analysis of data, emerged coding and categories, and finally results were presented in the following pages.

Stenberg (1998) had stated affective characteristics were very effective over metacognitive thinking skills of students. Strategy using, aware of timing issue and spend time to understand are some of the metacognitive reflections. However if there is not given enough time to students and the children have motivational decrease, they cannot use the cognitive strategies (Barnet, 2000) without taken into consideration of difficulty level or format of the assessment (Bıçak, 2013; Hacker, Bol, Horgan & Rakow, 2000; Krebs & Roebers, 2010).

Even if OE is seen as valuable to provide learning and demonstrate type of knowledge which need to be valued, MC items also can be write to measure not only low but also high cognitive levels of understanding in addition selection from set of alternatives. It has advantages for appropriateness and feasibility (Worthen, 1993). Also other researches (Feinberg, 1990; Hamilton, Nussbaum, Kupermintz, Kerkhoven & Snow, 1995; Herman & Winters, 1994) had supported this idea that MC includes multidimensionality in contrast to OE which is believed to cover only limited amount of content. Thus, in this recent research, not only OE may be seen as activate cognitive strategies such as 13 but

also MC can operate as 12. So, both of them can activate the students nearly similar cognitive skills.

The study elucidated from past experiences of students, teachers and academicians on differential effect of MC and OE, with which format cognitive strategy and self-checking are promoted more and which one triggers feeling of worry of the eight grade learners and requires more effort. 4 themes, therefore, emerged from the data was self-checking, cognitive strategy, worry and effort. Each of interview questions stimulated to gather common points of the participant views with main and appropriate probe cognitive interview questions.

It should not be forgotten that worry increases in evaluative situations. In this case, anxiety-provoking forces influences individuals cognitive functioning which exists thorough the assessment process. It is shown that the feeling does not diminish significantly from the beginning to the end of an examination (Hong, 1999).

As stated by Sadaghiani, Miller, Pollock and Rehn (2013) high quality of MC can substitute of an OE with given proper distracters in order to evaluate students' difficulties directly and evaluation of teaching methods and curricula indirectly. It was stressed that high qualified preparation of MC still can enable to learn about the children's ideas whereas OE can make the learners thinking more visible. This study opened further areas of investigation into differential effect MC and OE in many different dimensions and constructs.

The primary purpose of the current thesis is to look for the answer of "Can OE be a solution to transition to high school in Turkish examination system?" How OE and MC are perceived by the eighth grade students, branch teachers and academicians, and what are the differences between MC and OE in terms of worry, effort, cognitive strategy and self-checking are the sub questions to guide exploring the recent issue for Turkey from views of different participants having past experiences. Findings of the study revealed that OE question format may

stimulate students' some cognitive strategies and self-checking skills, and indirectly metacognitive experiences. Although the students, the teachers and the academicians see that OE promote cognitive strategy, self-checking more and need more effort during solution process in large scale assessments; MC may create worry more than OE because instead of question format, the results of standardized examinations through which students primarily affected are predominated. To summarize in the thesis it is tried to be taken attention of accountables in large scale assessments with regard to the four dimensions.

Through the following part, the results will be described again, supported by literature in terms of both similar and dissimilar research findings. Finally, recommendations to practitioners about to read the research findings and how to use the results in their teaching career will be explained with some suggestions; to future researchers about how to continue working on this framework, to enlarge the study and what can be included as a methodology; to politicians about what to do in their decision making process politically and what kind of decisions can be taken.

5.1. Recommendations to Practitioners

1.   According to research findings, teachers have experienced both MC and OE during their educational years and teaching careers. However, most of them have experienced preparing their students for MC evaluations. They suffer from this systematic situation. Since, to win the exams such as TEOG is one step further of development of their skills and behaviors.

2.   Before rapid movement of OE in large scale examinations in Turkey, teachers should be given induction programs about how to apply OE in teaching and learning process because firstly teachers should gain confidence about how to apply OE in-service-trainings and then they can teach their students efficiently.

3.   According to current research and related literature, OE and MC measure different constructs. Teachers know very few about them, most of their views are vague and abstract. However, if MC is well prepared in some cognitive level skills, it can continue to be used as assessment and instrument. In any case thanks to their usefulness of some features it cannot be possible to be removed totally.

4.   Especially some participant teachers have much prejudice about MC. They find OE appropriate for large scale examinations in Turkey but drawbacks of OE should be taken into considerations in addition to advantages.

5.   As stated by research findings, OE possibly could promote metacognition. Teachers should be informed about its dimensions such as self-checking or cognitive strategy proposed in this recent research so that new teaching techniques and instructional activities may be studied or constructed.

6.   When the number of induction programs increase, prejudice about MC or OE may decrease; positive attitude toward question formats can be developed and in which situations they can be used appropriately should be informed.

7.   More education toward OE application process should be given to the educators in our country. For instance, during classroom exercises the teachers motivate the students to use creating their own constructed way and to reword the given information on the question roots. The students should be gained habit of going over their answers in MC or OE and taught to ask themselves always how they are doing or whether they are in right way. OE questions should be solved more in the lessons so that the children can feel higher confidence to this format and feel comfort when they are faced with OE immediately.

5.2. Recommendation to Researchers

Hopefully, this study provides an insight on the differential effects of question formats in educational sciences. It aims to provide different perspectives for future researchers to look into. Even if this study takes its essence from O'Neil & Brown (1998)'s study which was seen as one of the most comprehensive research in large scale examinations in its era, trying to adapt this kind of research in Turkey was priceless. Because in one shot, four different dimensions were examined over differential aspects of MC and OE from the students', teachers' and academicians' points of view.

This may be important to rule out in future studies:

1.   Usage of question formats of MC and OE can be studied in program/curriculum development studies for what purposes. Due to the fact that measurement and evaluation is an integral part of program development process, whether or not OE which will be a popular format in recent years is compatible with new instructional methods can be researched. So, readers, users of OE, new researchers can be aware of this format in Turkey. May be instruments consisting of OE can be constructed more such as OE performance or achievement questions.

2.   With the same framework but in different research design such as experimental or mixed method of this research would be examined. For instance, with quasi experimental research design, the effect of difference between OE and MC on the students in terms of cognitive strategy activation can be evaluated. Similar questions but in different formats can be given to the middle school students after an implementation. So, which format promotes self-checking or cognitive strategy more can be assessed quantitatively with a pure experimental application.

3.   Perspectives of policy makers should be collected for future decisions over appropriateness of rapid movement between OE and MC in large scale examinations in Turkey. Similar interview questions prepared in the current

research can be used for the research sample from policy makers; selected as convenience sampling method. Some of the decision makers can be applied semi-structured interview.

4.   Observation and document analysis should be added to this research in order to be satisfying triangulation according to qualitative research approach. After similar application of interview questions, some selected eight grade students can be observed in their classes as natural setting about what they said and what they did are proportional or compatible with each other in terms of self-checking, cognitive strategy, worry and effort. The students who said "Yes I can judge correctness of my solution in MC" can be observed during solution process. Whether he really can check or not can be observed so that validity of what they had said can be sustained. Also analysis of their exam sheet can be examined as a document analysis about what kind of cognitive strategy they had used.

5.   The same questions can be change into OE and MC and effect of this strategy on student cognitive skill would be analyzed in depth. For example, after the students, who are selected as cluster sampling method, are given MC and solve them, they are asked to change into OE. How their effort change such as how to keep work, to concentrate can be inquired. Whether or not every MC question can be change into OE and their reasons can be interviewed. So, advantages and disadvantages of the formats, and whether all cognitive level abilities can be measured by only one format may be considered.

6.   Likert type of scales measuring cognitive strategy, self-checking, worry and effort of the eight grade students in mathematics lessons, one of which was constructed by O'Neil & Brown (1998) can be applied to at least 1000 students in Turkey. Hence, results of the quantitative findings can be more generalized in Turkey.

7.   Needs analysis in MoNE can be studied so that the pre-service, in-service or teachers' in the field background about how to prepare and apply OE is learned. For instance, what the teachers already know about OE format, whether

they have any misconceptions, and what they need to know to be master in their career and be efficient to prepare their students for large scale assessments. Also, they can be interviewed as how they feel up to doing about rapid change from MC to OE.

8.   Different cognitive and affective dimensions rather than self-checking, cognitive strategy, worry and effort could possibly be researched as a narrower issue by new researchers. For instance, organizing or monitoring understanding is another construct of metacognition. Also self-efficacy and self-esteem dimensions can be considered as a further research topic under the framework of MC and OE.

9.   Only self-checking skills can be investigated in depth as qualitatively. As a longitudinal study, the students' evaluation can be changed into from MC to OE. In this shift, how the strategies of children are altered can be researched. Also effect of gender differences for differential effect of MC and OE can be inquired and/or over one branch such as mathematics, science lessons…etc.

5.4.   Recommendation to Policy Makers

There are number of limitations of the present study that need to be taken into account when interpreting the results. Present study was not sensitive enough to find views of decision makers about differential effect of MC and OE over metacognition and affect on Turkish examination system in order to propose suggestions to the dilemma stirred the media and education community since the year of 2011s.

Policy makers are decision makers who shapes today's world and determine road maps of the future. So, they form their own career and political future. In this way, policy makers are the first spark producers. The findings of this current thesis should be used for the betterment of our children and continuity of examination system instead of many archived thesis which results only known by its readers. As the thesis showed that OE can promote the

children's cognitive strategy and self-checking more, if OE is placed in large scale assessments step by step instead of one shot placement, neither children nor teacher look like a fish out of water. The students can use their cognition and logic more and so production of country may increase. They do not begin to use already prepared knowledge.

In addition, the current research showed that MC might create worry on the eighth grade students more than OE but it was inferred that worry may stem from being standardized examination in spite of question format. In schools, works diminishing students' worries should be applied. The exercise exams can be divided into two parts; one of which is MC and the other one transitioning to OE step by step. From the results, the mean of Turkey and whether or not OE creates a positive effect might be gathered.

In the exams, the amount of time remaining for OE was not mentioned by decision-makers. However, one of the results of this thesis was that the eighth grade students can concentrate as much as they can in MC than OE. It should be understood that to make the students sustain their concentration, more time should be given for OE than MC. The students must not panic about time so that they can better reflect their cognitive strategies and self-checking skills. Instead of compelling them to compete against time, they should be provided with an environment where they pace themselves by focusing on using their metacognitive skills.

Also, the thesis indicated that OE initiates checking works, judging correctness of solution process, asking how well doing, correcting errors and asking questions to stay on track skills. These are some of the metacognitive strategy skills. These skills, firstly, might be taught to teachers and then to students. For example, before the questions, some cue boxes, remindful of self-checking skills, should be shown to them such as:

"In angle-side questions while application of general triangle rule we should write the different one in the middle. Be careful while solving the following questions. Please judge the correctness of their solutions!"

To summarize, some aspects might be worth pursuing for politicians:

1. Contemporary studies about measurement should be read by everyone and they should be reader friendly.

2. Before taking rapid movement about standardized examinations in Turkey that will affect millions of students' lives in the future, views of students who will be affected directly, teachers and academicians should be get.

3. Research findings can be shared with the teachers in the field.

4. Dilemma in the media should be conversed with concrete data and research findings about measurement system instead of political arguments or unsupported hypotheses.

5. The conversations about changes in the Turkish examination system from MC to OE should be performed in accordance with appropriate dimensions. Teachers and students must be kept out of unconscious prejudice.

6. Politicians would highlight the ideas, "What does MoNE do? Why? And what do the researches/thesis or dissertations in Turkey and abroad show about format alterations? What have been their expected and unexpected effects on the system and its dependent compunds?"

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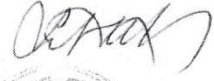
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APPENDICES

Appendix A: Approval from MoNE

T.C.
MİLLÎ EĞİTİM BAKANLIĞI
Yenilik ve Eğitim Teknolojileri Genel Müdürlüğü

Sayı : 81576613/605/1801847   06/05/2014
Konu: Anket Uygulama İzni

T.C.
ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Öğrenci İşleri Daire Başkanlığı)

İlgi: 19/04/2014 tarih ve 54850036-300-2082-004611 sayılı yazı.

İlgi yazı ile Bakanlığımıza göndermiş olduğunuz Üniversiteniz Eğitim Programları ve Öğretim Anabilim Dalı yüksek lisans öğrencisi Bengi BİRGİLİ'nin "Çoktan Seçmeli Sorular Alternatif Olarak Açık Uçlu Sorular: Türk Sınav Sisteminde İkilem" konulu tezinde kullanılmak üzere oluşturduğu veri toplama araçlarına yönelik izin talebi, Genel Müdürlüğümüz tarafından incelenmiştir.

Onaylı bir örneği Bakanlığımızda muhafaza edilen, uygulama sırasında da mühürlü ve imzalı örnekten çoğaltılan veri toplama araçlarının, "Ankara-Nesibe Aydın Okullarında ve İstanbul Çapa Atatürk Ortaokulu ile Arnavutköy Şehit Çavuş Selçuk Gürdal Yatılı Bölge Ortaokulu"nda eğitim öğretimi aksatmadan, gönüllülük esas olmak kaydıyla uygulanmasında bir sakınca görülmemektedir.

Bilgilerinizi ve gereğini rica ederim.

Mustafa KOÇ
Bakan a.
Genel Müdür

EK: Veri Toplama Aracı (10 Sayfa)

08-05.2014~7598

Güvenli Elektronik İmzalı
Aslı ile Aynıdır
0 7 Mayıs 2014

Bu belge, 5070 sayılı Elektronik İmza Kanununun 5 inci maddesi gereğince güvenli elektronik imza ile imzalanmıştır
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Elektronik Ağ: www.meb.gov.tr   Tel: (0 312) XXX XX XX
e-posta: adsoyad@meb.gov.tr   Faks: (0 312) XXX XX XX

Appendix B: Parental Approval Form

Veli Onay Mektubu

Sayın Veli,

Orta Doğu Teknik Üniversitesi, Eğitim Fakültesi, Eğitim Bilimleri Eğitim Programları ve Öğretim Bölümü Yüksek Lisans Öğrencisi olarak çalışmaktayım. "Çoktan Seçmeli Sorulara Alternatif Olarak Açık Uçlu Sorular: Türkiye Sınav Sistemi'nde İkilem" başlıklı bu araştırma yüksek lisans kapsamında yürütülmektedir. Çalışmada 13-14 yaş grubu ortaokul 8. Sınıf çocukları ile çoktan seçmeli ve açık uçlu sorular hakkında görüşme yapılması hedeflenmektedir. Bu formun/mektubun yollanış amacı, çocuğunuzun bu çalışmada gönüllü olarak yer alması ve ses kaydı yoluyla konu hakkındaki görüşlerinin toplanması hususunda iznizi almaktır.

Bu araştırmanın amacı, Türkiye'ye 4+4+4 yeni eğitim öğretim sistemiyle birlikte gelen, geniş ölçekli sınav sistemlerinden biri olan SBS'de, Kazak Modeli'ne göre yapılmak istenen çoktan seçmeli sorulardan açık uçlu sorulara geçiş ve bu geçişten doğan ikilem tartışmalarına farklı boyutlardan ışık tutmaktır. Bu tartışma ve katkı, üst biliş olgunun bilişsel strateji ve öz kontrol olarak adlandırılan iki alt boyutu ve duygu olgusunun efor ve endişe olarak adlandırılan iki alt boyu üzerinden olacaktır.

Çocuğunuzla olan görüşmeler esnasında sadece ses kaydı alınacak olup herhangi bir görüntü kaydı alınmayacaktır. Çalışmanın çocuğunuza zarar verici herhangi bir potansiyel riski bulunmamaktadır. Çocuğunuzdan katılımcı olarak beklenen araştırmacı tarafından sorulacak sorulara gönüllü olarak cevap vermensi, doğru ve tarafsız açıklamalar ile birlikte cevaplarını deneyimlediği somut örnekler ile zenginleştirmesidir. İstediği zaman görüşmeyi sonlandırabilme hakkına sahiptir. Görüşmeler kayıt altına alınacak olup yaklaşık 60 dakika sürmektedir. Çalışmanın çocuğunuza maddi bir yararı olmayacak ancak çocuğunuz bilimsel bir çalışmaya katkı sağlamış olacaktır.

Sizlerden ve çocuğunuzdan alınan kişisel bilgiler (adı, soyadı, yaşı, okuduğu okulların adı) ve açıklamalar araştırmacı tarafından gizlilikle korunacaktır. Ayrıca araştırmanın sonuçlarında gerçek isimler yer almayacak, sembol veyab takma isimler kullanılacaktır. Elde edilen bilgiler kayıt cihazına kaydedildikten sonra araştırmacı tarafından yazıya aktarılıp bilgisayar ortamında ve not dökümü halinde saklanacaktır.

Katılım gönüllülük esasına dayanmaktadır. Çocuğunuz görüşmeye katılamamaktan ötürü ya da görüşme esnasında katılımdan vazgeçme durumunda herhangi bir yaptırım veya olumsuz hiçbir sonuç ile karşılaşmayacaktır. Sizin onayınızın yanı sıra, çocuğunuzun gönüllülüğü de bu çalışmada yer alabilmesi için bir ön şarttır.

Çalışmaya ya da çocuğunuzun katılımına yönelik daha fazla bilgi için tez danışmanım Prof. Dr. Ercan KİRAZ'a başvurulması önemle rica olunur. Tel: 0312 210 40 37, Adres: ODTÜ Eğitim Fakültesi Eğitim Bilimleri Bölümü Eğitim Programları ve Öğretim Anabilim Dalı 06800 Çankaya/Ankara,E-Mail: ekiraz@metu.edu.tr

Teşekkür ederim,

Bengi BİRGİLİ
Tel: 05353337851, Adres: ODTÜ Üniversiteler mah. Dumlupınar Bulvarı Osman Yazıcı Kız Konukevi 06800 ÇANKAYA/ANKARA, E-Mail: birgili.bengi@metu.edu.tr

..

Yukarıda açıklamasını okuduğum çalışmaya, oğlum/kızım _____ 'nin katılımına izin veriyorum. Ebeveynin:

Adı, soyadı: _____   İmzası: _____   Tarih: _____

İmzalanan bu formu lütfen elden veya posta yolu ile aracılığı ile Bengi BİRGİLİ'ye ulaştırın.

Çocuğunuzun katılımı ya da haklarının korunmasına yönelik sorularınız varsa ya da çocuğunuz herhangi bir şekilde risk altında olabileceğine, strese maruz kalacağına inanıyorsanız Orta Doğu Teknik Üniversitesi Etik Kuruluna (312) 210-7348 telefon numarasından ulaşabilirsiniz.

Appendix C: Volunteer Participation Form
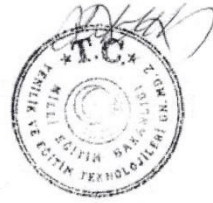
GÖNÜLLÜ KATILIM FORMU

Araştırmacı: Bengi BİRGİLİ

Araştırmacının Kurumu: Orta Doğu Teknik Üniversitesi Eğitim Bilimleri Bölümü Eğitim Programları ve Öğretim Anabilim Dalı

Araştırmanın Başlığı: Çoktan Seçmeli Sorulara Alternatif Olarak Açık Uçlu Sorular: Türkiye Sınav Sistemi'nde İkilem

Bu araştırmanın amacı, Türkiye'ye 4+4+4 yeni Eğitim-Öğretim sistemiyle birlikte gelen, geniş ölçekli sınav sistemlerinden biri olan SBS'de, Kazak Modeli'ne göre yapılmak istenen çoktan seçmeli sorulardan açık uçlu sorulara geçiş ve bu geçişten doğan ikilem tartışmalarına farklı boyutlardan ışık tutmaktır. Bu tartışma ve katkı, üst biliş olgunun bilişsel strateji ve öz kontrol olarak adlandırılan iki alt boyutu ve duygu olgusunun efor ve endişe olarak adlandırılan iki alt boyu üzerinden olacaktır.

Bu açıdan sizinle yapılacak görüşmelere katkınız, izniniz ve deneyimmlerinizi paylaşmanız uygun verilerin elde edilmesinde büyük önem taşımaktadır. Çalışmanın size zarar verici herhangi bir potansiyel riski bulunmamaktadır. Ortaokul 8. sınıf öğrencisi, ortaokul branş öğretmeni veya akademisyen katılımcı olarak sizlerden beklenen araştırmacı tarafından sorulacak sorulara gönüllü olarak cevap vermeniz, doğru ve tarafsız açıklamalar ile birlikte cevaplarınızı deneyimlediğiniz somut örnekler ile zenginleştirmenizdir. İstediğiniz zaman görüşmeyi sonlandırabilme hakkına sahipsiniz. Görüşmeler kayıt altına alınacak olup yaklaşık 60 dakika sürmektedir.

Katılım gönüllülük esasına dayanmaktadır. Katılamamaktan ötürü ya da görüşme esnasında katılımdan vazgeçme durumunda herhangi bir yaptırım veya olumsuz hiçbir sonuç ile karşılaşmayacaksınız. Sizlerden alınan kişisel bilgiler ve açıklamalarınız araştırmacı tarafından gizlilikle korunacaktır. Ayrıca araştırmanın sonuçlarında gerçek isimleriniz kullanılmayacaktır.

Çalışmanın amacı konusunda bilgilendirildim ve gönüllü katılmayı kabul ediyorum.

Katılımcı Ad Soyad:

İmza:

Araştırmaya yönelik oluşabilecek sorularınızla ilgili, araştırmacı ODTÜ Yüksek Lisans Öğrencisi Bengi Birgili'ye ulaşabilirsiniz.

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Adres: ODTÜ Üniversiteler mah. Dumlupınar Bulvarı Osman Yazıcı Kız Konukevi 06800 ÇANKAYA/ANKARA
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Appendix D: Semi-structured Student Interview Questions

1. Kaç yaşındasınız?
2. Hangi okulda okuyorsunuz?
3. Daha önce başka bir okulda okudunuz mu?
4. Dershaneye gidiyor musunuz?

<table>
<tr><td align="center">GÖRÜŞME SORULARI (MC)</td></tr>
</table>

- Çoktan seçmeli bir soruyu çözerken neleri tecrübe ettiğinizden bahseder misiniz?
  - ✓ Birden fazla yolla mı çözmeyi tercih edersiniz?
  - ✓ Öğretmeninizin öğrettiği yolla mı soruyu çözersiniz? Neden?
  - ✓ Kendinize yeni bir yol oluşturur musunuz?
  - ✓ Neye göre kendinize yeni bir yol oluşturursunuz? (kendinize yeni bir yol oluştururken nelere dikkat edersiniz?)
  - ✓ Sizce birden fazla yolla çözmenin sağladığı avantajlar ya da dezavantajlar nelerdir?
- Çoktan seçmeli bir soruyu daha iyi anlayabilmek için başka kelimelerle yeniden ifade eder misiniz?
  - ✓ Daha iyi ifade edebilmek için neler yaparsınız?
  - ✓ Nasıl bir strateji izlersiniz?
- Çoktan seçmeli soruları çözmek size çok zaman kaybettiriyor mu? Bu konuda ne düşünüyorsunuz?
  - ✓ Soru kökünü mü yoksa şıklardaki cevap cümlelerini mi anlamakta daha çok zaman harcıyorsunuz?
  - ✓ Sizce çeldiricileri ayırt edebilmek soruyu kısa zamanda çözebilmek için yardımcı olmakta mıdır? Nasıl?
- Çoktan seçmeli bir soruyu daha iyi anlayabilmek için tekrar okur musunuz? Neden?
  - ✓ Ne tür yöntem ve stratejilerle soru metnini tekrar edersiniz?
  - ✓ Sorudaki bilgileri yeniden organize etmeye ihtiyaç duyar mısınız?
  - ✓ Çoktan seçmeli bir soru metninde verilen bilgileri seçme ve organize etmede nasıl bir yöntem kullanırsınız? (sayısal/sözel)

- Çoktan seçmeli soruların çözümü esnasında işleminizi kontrol etme ihtiyacı duyar mısınız? Ne sıklıkla kontrol edersiniz? (sayısal/sözel)
- Çoktan seçmeli soruda işleminizi nasıl kontrol edersiniz?
  - ✓ Sizce niçin çoktan seçmeli sorular çözüm esnasında kontrol gerektiriyor?
- Çoktan seçmeli bir soruyu çözerken verdiğiniz cevabın doğruluğunu nasıl test ediyorsunuz? (sayısal/sözel)
  - ✓ Doğruluğu hakkında bir yargıya nasıl varırsınız?

- Çoktan seçmeli soruyu çözme sürecinde cevabınızın doğruluğunu öz değerlendirmeden geçirir misiniz?
  - ✓ Kendi öz kontrolünüzü sağlamak sizin için neden önemlidir?
- Çoktan seçmeli bir soruyu çözerken hatalarınızı rahat görebiliyor musunuz?
  - ✓ Genellikle ne tür hatalar yapıyorsunuz?
  - ✓ Hatalarınızı fark ettiğinizde düzeltiyor musunuz?
  - ✓ Hatalarınızı düzeltmede nasıl bir yol izlemeyi tercih edersiniz?
- Çoktan seçmeli bir soruda çözümün yolunda gidip gitmediğini kendinize soruyor musunuz? Bu konuda neler söyleyebilirsiniz? (sayısal/sözel)
  - ✓ Çözüm esnasında hataları kolayca görür müsünüz?
  - ✓ Eğer hataları göremezseniz nasıl bir yol izlersiniz?

❖ Çoktan seçmeli sorulardan oluşan bir sınav için çok fazla çalışmanız gerektiğini düşünüyor musunuz? Niçin?
  - ✓ Çözmek çok performans gerektiriyor mu?
❖ Çoktan seçmeli bir soruyu çözerken doğru sonuca ulaşıp ulaşamayacağınızı kestirebiliyor musunuz?
  - ✓ Başarısız olma ihtimali sizde ne tür duygular yaratır?
  - ✓ Başarısız olma ihtimali sizde hayal kırıklığı ya da endişe yaratır mı?
❖ Zaman zaman çoktan seçmeli bir soruyu çözerken performansınızdan dolayı mutluluk, tatminkârlık, yetersizlik ya da pişmanlık hissediyor musunuz?
  - ✓ Bu tarz sorularla uğraşmak size kolay geliyor mu?
❖ Zaman zaman başarısız olduğunuzda endişe oluşur mu? Neler söyleyebilirsiniz?
❖ Çoktan seçmeli soru çözerken gösterdiğiniz performansı nasıl test ediyorsunuz?
  - ✓ Soruyu anlamak ve çözebilmek için yeterli pratiğiniz var mı?
  - ✓ Performansınızı nasıl test ediyorsunuz?
  - ✓ Soruyu çözerken kendine güveniyor musun?

o Çoktan seçmeli bir soruyu çözebilmek için ne kadar çalışmanız gerektiğini düşünüyorsunuz?
  - ✓ Çoktan seçmeli bir soruyu çözebilmek için çok çalışmanız gerekiyor mu? Neler söyleyebilirsiniz?
  - ✓ Çoktan seçmeli sorularda çok pratik yapmanın ne gibi faydaları olabilir? Ne tür pratikler?
  - ✓ Çoktan seçmeli sorular çözüm esnasında veya konuyu öğrenirken çok fazla efor harcatan bir soru tipi midir? Bu konuda neler söyleyebilirsiniz?
o Çoktan seçmeli sorular sizce fazla konsantrasyon gerektiren sorular mıdır? Eğer öyleyse nedenini açıklar mısınız?
  - ✓ Soru kökleri mi yoksa seçenekleri mi fazlaca yoğunlaşmanızı gerektirmektedir? (sayısal/sözel)

- o Çoktan seçmeli soruları bilginizi en iyi şekilde yansıtabileceğiniz soru çeşidi olarak görüyor musunuz? Bu konuda neler söyleyebilirsiniz?
- o Çoktan seçmeli sorularda tüm gayretinizi gösterebildiğinizi düşünüyor musunuz?
    - ✓ Soruları rahatlıkla anlayabilir misiniz?
    - ✓ Cevap şıklarını kolayca anlayabilir misiniz?
    - ✓ Cevap şıkkını hızlı mı yoksa yavaş mı seçersiniz?
    - ✓ Cevap şıklarını görüyor olmanız sizce dezavantaj mıdır? Neden?
    - ✓ Eğer cevapları görmeseydiniz çözüm esnasında kendinizi güvende hisseder miydiniz?
    - ✓ Eğer cevapları görmeseydiniz çözüm esnasında daha mı çok efor harcardınız? Niçin?
- o Zor olan çoktan seçmeli bir soruyla karşılaştığınızda, çözüme rahatlıkla ya da kısa zamanda ulaşamayacağınızı anladığınızda bile o soru üzerinde çalışmaya devam eder misiniz?
    - ✓ Israrla soruyu çözmeye devam eder misiniz yoksa yeni soruya mı geçersiniz?
    - ✓ Eğer ilk denemede çözemezseniz pes eder misiniz?
    - ✓ Cevabı bulamamanız ya da cevaplarınızın hatalı olduğunu düşünmeniz sonraki sorular için gayretinizde bir kayba neden olur mu?
    - ✓ Hangi durumlarda pes edersiniz?
    - ✓ Diğer soruların çözümünü bitirdikten sonra çözemediğiniz soruya geri döner misiniz?

GÖRÜŞME SORULARI (OE)

- Açık uçlu bir soruyu çözerken neleri tecrübe ettiğinizden bahseder misiniz?
    - ✓ Birden fazla yolla mı çözmeyi tercih edersiniz?
    - ✓ Öğretmeninizin öğrettiği yolla mı soruyu çözersiniz? Neden?
    - ✓ Kendinize yeni bir yol oluşturur musunuz?
    - ✓ Neye göre kendinize yeni bir yol oluşturursunuz?
    - ✓ Sizce birden fazla yolla çözmenin sağladığı avantajlar ya da dezavantajlar nelerdir?
- Açık uçlu bir soruyu daha iyi anlayabilmek için başka kelimelerle yeniden ifade eder misiniz?
    - ✓ Daha iyi ifade edebilmek için neler yaparsınız?
    - ✓ Nasıl bir strateji izlersiniz?
- Açık uçlu soruları çözmek size çok zaman kaybettirir mi? Bu konuda ne düşünüyorsunuz?
    - ✓ Sizce bu tip soruların hangi özellikleri zaman kaybına neden olmaktadır?
    - ✓ Problem durumunun verilmesinde mi, çözüm yolunun kararlaştırılmasında mı daha çok zaman harcarsınız?
    - ✓ Sabit bir metodunun olmaması zaman açısından sizi nasıl etkilemektedir?

- ✓ Sabit cevabının olmaması, muhtemel cevapların varlığı, farklı yol ve değişik seviyelerde çözülebilmeleri zamana fayda/zarar bağlamında nasıl etki etmektedir?
- Açık uçlu bir soruyu daha iyi anlayabilmek için tekrar okur musunuz? Neden?
  - ✓ Ne tür yöntem ve stratejilerle soru metnini tekrar edersiniz?
  - ✓ Sorudaki bilgileri yeniden organize etmeye ihtiyaç duyar mısınız?
  - ✓ Açık uçlu bir sorudaki bilgileri seçme ve organize etmede nasıl bir yöntem kullanırsınız? (sayısal/sözel)

- • Açık uçlu soruların çözümü esnasında işleminizi kontrol etme ihtiyacı duyar mısınız? Ne kadar sıklıkla kontrol edersiniz? (sayısal/sözel)
- • Açık uçlu soruda işleminizi nasıl kontrol edersiniz?
  - ✓ Sizce niçin açık uçlu sorular çözüm esnasında kontrol gerektiriyor?
- • Açık uçlu bir soruyu çözerken yanıtların doğruluğunu nasıl test ediyorsunuz? (sayısal/sözel)
  - ✓ Doğruluğu hakkında bir yargıya nasıl varırsınız?
- • Açık uçlu soruyu çözme sürecinde cevabınızın doğruluğunu öz değerlendirmeden geçirir misiniz? Niçin?
  - ✓ Niçin kendi öz kontrolünüzü sağlamak sizin için önemlidir?
- • Açık uçlu bir soruyu çözerken hatalarınızı rahat görebiliyor musunuz?
  - ✓ Genellikle ne tür hatalar yapıyorsunuz?
  - ✓ Hatalarınızı fark ettiğinizde düzeltiyor musunuz?
  - ✓ Hatalarınızı düzeltmede nasıl bir yol izlemeyi tercih edersiniz?
- • Açık uçlu bir soruda çözümün yolunda gidip gitmediğini kendinize soruyor musunuz? Bu konuda neler söyleyebilirsiniz? (sayısal/sözel)
  - ✓ Çözüm esnasında hataları kolayca görür müsünüz?
  - ✓ Eğer hataları göremezseniz nasıl bir yol izlersiniz?

- ❖ Açık uçlu sorulardan oluşan bir sınav için çok fazla çalışmanız gerektiğini düşünüyor musunuz? Niçin?
  - ✓ Çözmek çok performans gerektiriyor mu?
- ❖ Açık uçlu bir soruyu çözerken doğru sonuca ulaşıp ulaşamayacağınızı kestirebiliyor musunuz?
  - ✓ Başarısız olma ihtimali sizde ne tür duygular yaratır?
  - ✓ Başarısız olma ihtimali sizde hayal kırıklığı ya da endişe yaratır mı?
- ❖ Zaman zaman açık uçlu bir soruyu çözerken performansınızdan dolayı mutluluk, tatminkârlık, yetersizlik ya da pişmanlık hissediyor musunuz?
  - ✓ Bu tarz sorularla uğraşmak size kolay geliyor mu?
- ❖ Zaman zaman başarısız olduğunuzda endişe oluşur mu? Neler söyleyebilirsiniz?
- ❖ Açık uçlu bir soru çözerken gösterdiğiniz performansı nasıl test ediyorsunuz?

- ✓ Soruyu anlamak ve çözebilmek için yeterli pratiğiniz var mı?
- ✓ Performansınızı nasıl test ediyorsunuz?
- ✓ Soruyu çözerken kendilerine güveniyorlar mıdır?

- o Açık uçlu bir soruyu çözebilmek için ne kadar çalışmanız gerektiğini düşünüyorsunuz?
  - ✓ Açık uçlu bir soruyu çözebilmek için çok çalışmanız gerekiyor mu? Neler söyleyebilirsiniz?
  - ✓ Açık uçlu sorularda çok pratik yapmanın ne gibi faydaları olabilir? Ne tür pratikler?
  - ✓ Açık uçlu sorular çözüm esnasında veya konuyu öğrenirken çok fazla efor harcatan bir soru tipi midir? Bu konuda neler söyleyebilirsiniz?
- o Açık uçlu sorular sizce fazla konsantrasyon gerektiren sorular mıdır? Eğer öyleyse nedenini açıklar mısınız?
  - ✓ Problem durumu mu yoksa olası çözüm yollarına karar verme süreci mi fazlaca yoğunlaşmanızı gerektirmektedir?
- o Açık uçlu soruları bilginizi en iyi şekilde yansıtabileceğiniz soru çeşidi olarak görüyor musunuz? Bu konuda neler söyleyebilirsiniz?
- o Açık uçlu sorularda tüm gayretinizi gösterebildiğinizi düşünüyor musunuz?
  - ✓ Soruları rahatlıkla anlayabilir misiniz?
  - ✓ Sorunun türünü kolayca seçebilir misiniz?
  - ✓ Çözüm yollarını hızlı mı yoksa yavaş mı seçersiniz?
  - ✓ Tek bir çözüm yolu olmaması dezavantaj mıdır? Neden?
  - ✓ Önünüzde cevap şıkları olmadığından çözüm esnasında kendinizi güvende hisseder misiniz?
  - ✓ Eğer cevapları görseydiniz gayretinizde nasıl bir değişim meydana gelirdi? Daha mı az efor harcardınız? Niçin?
- o Zor olan açık uçlu bir soruyla karşılaştığınızda, çözüme rahatlıkla ya da kısa zamanda ulaşamayacağınızı anladığınızda bile o soru üzerinde çalışmaya devam eder misiniz?
  - ✓ Israrla soruyu çözmeye devam eder misiniz yoksa yeni soruya mı geçersiniz?
  - ✓ Eğer ilk denemede çözemezseniz pes eder misiniz?
  - ✓ Cevabı bulamamanız, farklı çözüm yollarının çalışmadığını görmeniz ya da değişik seviyelerdeki çözüm yollarını fark edememeniz sonraki sorular için gayretinizde bir kayba neden olur mu?
  - ✓ Hangi durumlarda pes edersiniz?
  - ✓ Diğer soruların çözümünü bitirdikten sonra çözemediğiniz soruya geri döner misiniz?

Appendix E: Semi-structured Teacher Interview Questions

Öğretmen Bilgileri:

5. Kaç yaşındasınız?
6. Hangi üniversiteden, hangi bölümden, ne zaman mezun oldunuz?
7. Hangi branşta öğretmenlik yapıyorsunuz?
8. Kaç yıldır öğretmenlik yapıyorsunuz?
9. Şu anda hangi okulda öğretmenlik yapıyorsunuz?
10. Daha önce hangi okullarda çalıştınız?
11. Sınıflarda ortalama kaç öğrenciniz var?

<div align="center">

GÖRÜŞME SORULARI (MC)

</div>

- Öğrencilerin çoktan seçmeli bir soruyu çözerken neleri tecrübe ettiğinden bahseder misiniz?
    - ✓ Birden fazla yolla mı çözmeyi tercih ederler?
    - ✓ Öğretmenlerinin öğrettiği yolla mı soruyu çözmeyi tercih ederler? Neden?
    - ✓ Kendilerine yeni bir yol oluştururlar mı?
    - ✓ Neye göre kendilerine yeni bir yol oluştururlar?
    - ✓ Sizce öğrencilerin birden fazla yolla çözmenin sağladığı avantajlar ya da dezavantajlar nelerdir?
- Öğrenciler çoktan seçmeli bir soruyu daha iyi anlayabilmek için başka kelimelerle yeniden ifade ederler mi?
    - ✓ Daha iyi ifade edebilmek için neler yaparlar?
    - ✓ Nasıl bir strateji izlerler?
- Çoktan seçmeli soruları çözmek öğrencilere çok zaman kaybettiriyor mu? Bu konuda ne düşünüyorsunuz?
    - ✓ Soru kökünü mü yoksa şıklardaki cevap cümlelerini mi anlamakta daha çok zaman harcıyorlar?
    - ✓ Sizce çeldiricileri ayırt edebilmek soruyu kısa zamanda çözebilmek için öğrencilere yardımcı olmakta mıdır? Nasıl?
- Çoktan seçmeli bir soruyu daha iyi anlayabilmek için tekrar okurlar mı? Neden?
    - ✓ Ne tür yöntem ve stratejilerle soru metnini tekrar ederler?
    - ✓ Sorudaki bilgileri yeniden organize etmeye ihtiyaç duyalar mı?
    - ✓ Çoktan seçmeli bir sorudaki bilgileri seçme ve organize etmede nasıl bir yöntem kullanırlar? (sayısal/sözel)

- Çoktan seçmeli soruların çözümü esnasında işlemlerini kontrol etme ihtiyacı duyarlar mı? Ne sıklıkla kontrol ederler? (sayısal/sözel)
- Çoktan seçmeli soruda işlemlerini nasıl kontrol ederler?
  - ✓ Sizce niçin çoktan seçmeli sorular çözüm esnasında öğrencilerin kontrolünü gerektiriyor?
- Çoktan seçmeli bir soruyu çözerken öğrenciler yanıtların doğruluğunu nasıl test ederler? (sayısal/sözel)
  - ✓ Doğruluğu hakkında bir yargıya nasıl varırlar?
- Çoktan seçmeli soruyu çözme sürecinde cevaplarının doğruluğunu öz değerlendirmeden geçirirler mi? Niçin?
  - ✓ Kendi öz kontrollerini sağlamak onlar için neden önemlidir?
- Çoktan seçmeli bir soruyu çözerken hatalarını rahat görebilirler mi?
  - ✓ Genellikle ne tür hatalar yapıyorlar?
  - ✓ Hatalarını fark ettiklerinde düzeltirler mi?
  - ✓ Hatalarını düzeltmede nasıl bir yol izlemeyi tercih ederler?
- Çoktan seçmeli bir soruda çözümün yolunda gidip gitmediğini kendilerine sorarlar mı? Bu konuda neler söyleyebilirsiniz?
  - ✓ Çözüm esnasında hataları kolayca görebilirler mi?
  - ✓ Eğer hataları göremezler ise nasıl bir yol izlerler?
- ❖ Çoktan seçmeli sorulardan oluşan bir sınav için öğrencilerinizin çok fazla çalışmaları gerektiğini düşünüyor musunuz? Niçin?
  - ✓ Çözmek çok performans gerektirir mi?
- ❖ Çoktan seçmeli bir soruyu çözerken doğru sonuca ulaşıp ulaşamayacaklarını kestirebilirler mi?
  - ✓ Başarısız olma ihtimali öğrencilerde ne tür duygular yaratır?
  - ✓ Başarısız olma ihtimali öğrencilerde hayal kırıklığı ya da endişe yaratır mı?
- ❖ Zaman zaman çoktan seçmeli bir soruyu çözerken performanslarından dolayı mutluluk, tatminkârlık, yetersizlik ya da pişmanlık hissederler mi?
  - ✓ Bu tarz sorularla uğraşmak sizce öğrencilere kolay geliyor mudur?
- ❖ Zaman zaman başarısız olduklarında endişe oluşur mu? Neler söyleyebilirsiniz?
- ❖ Çoktan seçmeli soru çözerken gösterdikleri performanslarını nasıl test ederler?
  - ✓ Soruyu anlamak ve çözebilmek için yeterli pratikleri var mıdır?
  - ✓ Performanslarını nasıl test ederler?
  - ✓ Soruyu çözerken kendilerine güveniyorlar mıdır?

- o Çoktan seçmeli bir soruyu çözebilmek için öğrencilerin ne kadar çalışması gerektiğini düşünüyorsunuz?
  - ✓ Çoktan seçmeli bir soruyu çözebilmek için çok çalışmaları gerekiyor mu? Neler söyleyebilirsiniz?

- ✓ Çoktan seçmeli sorularda çok pratik yapmanın ne gibi faydaları olabilir? Ne tür pratikler?
- ✓ Çözüm esnasında veya konuyu öğrenirken çok fazla efor harcatan bir soru tipi midir? Bu konuda neler söyleyebilirsiniz?
- o Çoktan seçmeli sorular sizce öğrenciler için fazla konsantrasyon gerektiren sorular mıdır? Eğer öyleyse nedenini açıklar mısınız?
  - ✓ Soru kökleri mi yoksa seçenekleri mi öğrencilerin fazlaca yoğunlaşmalarını gerektirmektedir? (sayısal/sözel)
- o Çoktan seçmeli soruları öğrencinizin bilgilerini en iyi şekilde yansıtabilecekleri soru çeşidi olarak görüyor musunuz? Bu konuda neler söyleyebilirsiniz?
- o Çoktan seçmeli sorularda öğrencilerin tüm gayretini gösterebildiklerini düşünüyor musunuz?
  - ✓ Soruları rahatlıkla anlayabilirler mi?
  - ✓ Cevap şıklarını kolayca anlayabilirler mi?
  - ✓ Cevap şıkkını hızlı mı yoksa yavaş mı seçerler?
  - ✓ Cevap şıklarını görüyor olmaları sizce dezavantaj mıdır? Neden?
  - ✓ Cevapları görmeseler çözüm esnasında kendilerini güvende hissederler miydi?
  - ✓ Cevapları görmeseler çözüm esnasında daha mı iyi performans gösterirler? Niçin?
- o Öğrenciler zor olan çoktan seçmeli bir soruyla karşılaştıklarında, çözüme rahatlıkla ya da kısa zamanda ulaşamayacaklarını anladıklarında bile o soru üzerinde çalışmaya devam ederler mi?
  - ✓ Israrla soruyu çözmeye devam mı ederler yoksa yeni soruya mı geçerler?
  - ✓ Eğer ilk denemede çözemezlerse pes ederler mi?
  - ✓ Cevabı bulamamaları ya da cevapların hatalı olduğunu düşünmeleri öğrencilerin sonraki sorular için gayretlerinde kaybetmesine neden olur mu?
  - ✓ Hangi durumlarda pes ederler?
  - ✓ Diğer soruları bitirdikten sonra çözemedikleri soruya geri dönerler mi?

<div align="center">GÖRÜŞME SORULARI (OE)</div>

- Öğrencilerinizin açık uçlu bir soruyu çözerken neleri tecrübe ettiğinden bahseder misiniz?
  - ✓ Birden fazla yolla mı çözmeyi tercih ederler?
  - ✓ Öğretmenlerinin öğrettiği yolla mı soruyu çözmeyi tercih ederler? Neden?
  - ✓ Kendilerine yeni bir yol oluştururlar mı?
  - ✓ Neye göre kendilerine yeni bir yol oluştururlar?
  - ✓ Sizce birden fazla yolla çözmenin avantajları/dezavantajları neler olabilir?

- Açık uçlu bir soruyu daha iyi anlayabilmek için başka kelimelerle yeniden ifade ederler mi?
  - ✓ Daha iyi ifade edebilmek için neler yaparlar?
  - ✓ Nasıl bir strateji izlerler?
- Açık uçlu soruları çözmek öğrencilere çok zaman kaybettirir mi? Bu konuda ne düşünüyorsunuz?
  - ✓ Sizce bu tip soruların hangi özellikleri zaman kaybına neden olmaktadır?
  - ✓ Problem durumunun verilmesinde mi yoksa çözüm yolunun karar verilmesinde mi daha çok zaman harcamaktadırlar?
  - ✓ Sabit bir metodunun olmaması zaman açısından öğrencileri nasıl etkilemektedir?
  - ✓ Sabit cevabının olmaması, muhtemel cevapların varlığı, farklı yol ve değişik seviyelerde çözülebilmeleri zamana fayda/zarar bağlamında nasıl etki etmektedir?
- Açık uçlu bir soruyu öğrencileriniz daha iyi anlayabilmek için tekrar ederler mi? Neden?
  - ✓ Ne tür yöntem ve stratejilerle tekrar ederler?
  - ✓ Sorudaki bilgileri yeniden organize etmeye ihtiyaç duyarlar mı?
  - ✓ Açık uçlu bir sorudaki bilgileri seçme ve organize etmede nasıl bir yöntem kullanırlar?

- Açık uçlu sorularda çözüm esnasında işlemlerini kontrol etme ihtiyacı duyarlar mı? Ne kadar sıklıkla kontrol ederler? (sayısal/sözel)
- Açık uçlu soruda işlemlerini nasıl kontrol ederler?
  - ✓ Niçin açık uçlu sorular çözüm esnasında öğrencilerin kontrolünü gerektiriyor?
- Açık uçlu bir soruyu çözerken öğrenciler yanıtların doğruluğunu nasıl test ederler? (sayısal/sözel)
  - ✓ Doğruluğu hakkında bir yargıya nasıl varırlar?
- Açık uçlu soruyu çözme sürecinde kendilerine ne kadar iyi yapıp yapmadıklarını sorarlar mı? Niçin?
  - ✓ Niçin kendi öz kontrollerini sağlamak onlar için önemlidir?
- Açık uçlu bir soruyu çözerken hatalarını rahat görebilirler mi?
  - ✓ Genellikle ne tür hatalar yaparlar?
  - ✓ Hatalarını düzeltirler mi?
  - ✓ Hatalarını düzeltmede nasıl bir yol izlemeyi tercih ederler?
- Açık uçlu bir soruda çözümün yolunda gidip gitmediğini kendilerine sorarlar mı? Bu konuda neler söyleyebilirsiniz? (sayısal/sözel)
  - ✓ Çözüm esnasında hatalarını kolayca görebilirler mi?
  - ✓ Eğer hatalarını göremezler ise nasıl bir yol izlerler?

- ❖ Öğrencilerin açık uçlu sorulardan oluşan bir sınav için çok fazla çalışmaları gerektiğini düşünüyor musunuz? Niçin?
  - ✓ Çözmek çok performans gerektirir mi?
- ❖ Açık uçlu bir soruyu çözerken doğru sonuca ulaşıp ulaşamayacaklarını kestirebilirler mi?
  - ✓ Başarısız olma ihtimali öğrencilerde ne tür duygular yaratır?
  - ✓ Başarısız olma ihtimali öğrencilerde hayal kırıklığı ya da endişe yaratır mı?
- ❖ Zaman zaman açık uçlu bir soruyu çözerken performanslarından dolayı mutluluk, tatminkârlık, yetersizlik ya da pişmanlık hissederler mi?
  - ✓ Bu tarz sorularla uğraşmak sizce öğrencilere kolay geliyor mudur?
- ❖ Zaman zaman başarısız olduklarında endişe oluşur mu? Neler söyleyebilirsiniz?
- ❖ Açık uçlu bir soruyu çözerken gösterdikleri performansı nasıl test ederler?
  - ✓ Soruyu anlama ve çözebilme konusunda yeterli pratikleri var mıdır?
  - ✓ Performanslarını nasıl test ederler?
  - ✓ Soruyu çözerken kendilerine güveniyorlar mıdır?

- o Açık uçlu bir soruyu çözebilmek için öğrencilerin ne kadar çalışması gerektiğini düşünüyorsunuz?
  - ✓ Açık uçlu bir soruyu çözebilmek için çok çalışmaları gerekiyor mu? Neler söyleyebilirsiniz?
  - ✓ Açık uçlu sorularda çok pratik yapmanın ne gibi faydaları olabilir? Ne tür pratikler?
  - ✓ Çözüm esnasında veya konuyu öğrenirken çok fazla efor harcatan bir soru tipi midir? Bu konuda neler söyleyebilirsiniz?
- o Açık uçlu sorular sizce öğrenciler için fazla konsantrasyon gerektiren sorular mıdır? Eğer öyleyse nedenini açıklar mısınız?
  - ✓ Problem durumu mu yoksa olası çözüm yollarına karar verme süreci mi öğrencilerin fazlaca yoğunlaşmasını gerektirmektedir?
- o Açık uçlu soruları öğrencilerinizin bilgilerini en iyi şekilde yansıtabileceği soru çeşidi olarak görüyor musunuz? Bu konuda neler söyleyebilirsiniz?
- o Açık uçlu sorularda öğrencilerin tüm gayretinizi gösterebildiklerini düşünüyor musunuz?
  - ✓ Soruları rahatlıkla anlayabilirler mi?
  - ✓ Sorunun türünü kolayca seçebilirler mi?
  - ✓ Çözüm yollarını hızlı mı yoksa yavaş mı seçerler?
  - ✓ Tek bir çözüm yolu olmaması öğrenciler için dezavantaj mıdır? Neden?
  - ✓ Önlerinde cevap şıkları olmadığından çözüm esnasında kendilerini güvende hissederler mi?

- ✓ Eğer cevap şıklarını görebilselerdi gayretlerinde nasıl bir değişim meydana gelirdi? Daha mı az efor harcarlardı? Niçin?
- o Öğrenciler zor olan açık uçlu bir soruyla karşılaştığında, çözüme rahatlıkla ya da kısa zamanda ulaşamayacaklarını anladıklarında bile o soru üzerinde çalışmaya devam ederler mi?
    - ✓ Israrla soruyu çözmeye devam mı ederler mi yoksa yeni soruya mı geçerler?
    - ✓ Eğer ilk denemede çözemezlerse pes ederler mi?
    - ✓ Cevabı bulamamaları, farklı çözüm yollarının çalışmadığını görmeleri ya da değişik seviyelerdeki çözüm yollarını fark edememeleri öğrencilerin sonraki sorular için gayretinde bir kayba neden olur mu?
    - ✓ Hangi durumlarda pes ederler?
    - ✓ Diğer soruları bitirdikten sonra çözemedikleri soruya geri dönerler mi?

Appendix F: Semi-structured Academician Interview Questions

Akademisyen Bilgileri:

1. Kaç yaşındasınız?
2. Hangi üniversiteden, hangi bölümden ne zaman oldunuz?
3. Hangi üniversitede akademisyenlik yapıyorsunuz ve uzmanlık alanlarınız nelerdir?
4. Kaç yıldır akademisyenlik yapıyorsunuz?
5. Daha önce hangi üniversitelerde ya da kurumda çalıştınız?
6. Lisans, yüksek lisans ve doktora düzeyinde kaç sınıfınız var? Hangi dersleri veriyorsunuz?

GÖRÜŞME SORULARI (MC)

- Öğrencilerin çoktan seçmeli bir soruyu çözerken neleri tecrübe ettiğinden bahseder misiniz?
  - ✓ Birden fazla yolla mı çözmeyi tercih ederler?
  - ✓ Öğretmenlerinin öğrettiği yolla mı soruyu çözmeyi tercih ederler? Neden?
  - ✓ Kendilerine yeni bir yol oluştururlar mı?
  - ✓ Neye göre kendilerine yeni bir yol oluştururlar?
  - ✓ Sizce öğrencilerin birden fazla yolla çözmenin sağladığı avantajlar ya da dezavantajlar nelerdir?
- Öğrenciler çoktan seçmeli bir soruyu daha iyi anlayabilmek için başka kelimelerle yeniden ifade ederler mi?
  - ✓ **Başka kelimelerle ifade etmelerinin ne gibi faydası olabilir? (Bilişsel ya da duyuşsal)**
  - ✓ Soruyu daha iyi ifade edebilmek için neler yaparlar?
  - ✓ Nasıl bir strateji izlerler?
- Çoktan seçmeli soruları çözmek öğrencilere çok zaman kaybettiriyor mu? Bu konuda ne düşünüyorsunuz?
  - ✓ Soru kökünü mü yoksa şıklardaki cevap cümlelerini mi anlamakta daha çok zaman harcıyorlar?
  - ✓ Sizce çeldiricileri ayırt edebilmek soruyu kısa zamanda çözebilmek için öğrencilere yardımcı olmakta mıdır? Nasıl?
- Çoktan seçmeli bir soruyu daha iyi anlayabilmek için tekrar okurlar mı? Neden?
  - ✓ Ne tür yöntem ve stratejilerle soru metnini tekrar ederler?
  - ✓ Sorudaki bilgileri yeniden organize etmeye ihtiyaç duyalar mı?
  - ✓ Çoktan seçmeli bir sorudaki bilgileri seçme ve organize etmede nasıl bir yöntem kullanırlar?
  - ✓ **Soruyu tekrar etmek ya da yeniden organize etmek bilişsel ya da duyuşsal bir katkı sağlamakta mıdır?**

- Çoktan seçmeli soruların çözümü esnasında işlemlerini kontrol etme ihtiyacı duyarlar mı? Ne sıklıkla kontrol ederler? (sayısal/sözel)
  - ✓ **Sizce öğrencilerin öz kontrolü onlara ne fayda sağlamaktadır?**
- Çoktan seçmeli soruda işlemlerini nasıl kontrol ederler?
  - ✓ Sizce niçin çoktan seçmeli sorular çözüm esnasında öğrencilerin kontrolünü gerektiriyor?
  - ✓ **Kontrolün bilişsel ya da duyuşsal bir faydası var mıdır? Varsa nedir?**
- Çoktan seçmeli bir soruyu çözerken öğrenciler yanıtların doğruluğunu nasıl test ederler? (sayısal/sözel)
  - ✓ Doğruluğu hakkında bir yargıya nasıl varırlar?
- Çoktan seçmeli soruyu çözme sürecinde cevaplarının doğruluğunu öz değerlendirmeden geçirirler mi? Niçin?
  - ✓ Kendi öz kontrollerini sağlamak onlar için neden önemlidir?
- Çoktan seçmeli bir soruyu çözerken hatalarını rahat görebilirler mi?
  - ✓ Genellikle ne tür hatalar yaparlar?
  - ✓ Hatalarını fark ettiklerinde düzeltirler mi?
  - ✓ Hatalarını düzeltmede nasıl bir yol izlemeyi tercih ederler?
  - ✓ **Hatalarını görebilmesinin ve düzeltebilmesinin öğrenciye bilişsel ya da duyuşsal katkısı nedir? Bunlar hangi boyutlarda fayda sağlamaktadır?**
- Öğrenciler çoktan seçmeli bir soruda çözümün yolunda gidip gitmediğini kendilerine sorarlar mı? Bu konuda neler söyleyebilirsiniz? (sayısal/sözel)
  - ✓ Çözüm esnasında kendi hatalarını kolayca görebilirler mi?
  - ✓ Eğer hatalarını göremezlerse nasıl bir yol izlerler?

❖ Çoktan seçmeli sorulardan oluşan bir sınav için öğrencilerinizin çok fazla çalışmaları gerektiğini düşünüyor musunuz? Niçin?
  - ✓ Çözmek çok performans gerektirir mi?
❖ Çoktan seçmeli bir soruyu çözerken doğru sonuca ulaşıp ulaşamayacaklarını kestirebilirler mi?
  - ✓ Başarısız olma ihtimali öğrencilerde ne tür duygular yaratır?
  - ✓ Başarısız olma ihtimali öğrencilerde hayal kırıklığı ya da endişe yaratır mı?
❖ **Çoktan seçmeli soruların öğrencilere duyuşsal boyuttaki katkısı ya da olumsuz etkisi ne olabilir?**
❖ Zaman zaman çoktan seçmeli bir soruyu çözerken performanslarından dolayı mutluluk, tatminkârlık, yetersizlik ya da pişmanlık hissederler mi?
  - ✓ Bu tarz sorularla uğraşmak sizce öğrencilere kolay geliyor mudur?
❖ Zaman zaman başarısız olduklarında endişe oluşur mu? Neler söyleyebilirsiniz?
❖ Çoktan seçmeli soru çözerken gösterdikleri performanslarını nasıl test ederler?
  - ✓ Soruyu anlamak ve çözebilmek için yeterli pratikleri var mıdır?

- ✓ Performanslarını nasıl test ederler?
- ✓ Soruyu çözerken kendilerine güveniyorlar?

- o Çoktan seçmeli bir soruyu çözebilmek için öğrencilerin ne kadar çalışması gerektiğini düşünüyorsunuz?
  - ✓ Çoktan seçmeli bir soruyu çözebilmek için çok çalışmaları gerekiyor mu? Neler söyleyebilirsiniz?
  - ✓ Çoktan seçmeli sorularda çok alıştırma yapmanın ne gibi faydaları olabilir? Ne tür pratikler?
  - ✓ Çözüm esnasında veya konuyu öğrenirken çok fazla efor harcatan bir soru tipi midir? Bu konuda neler söyleyebilirsiniz?
- o **Çoktan seçmeli soruların öğrencilere duyuşsal boyutlardan biri olan "efor" açısından katkısı ya da olumsuz etkisi ne olabilir?**
- o Çoktan seçmeli sorular sizce öğrenciler için fazla konsantrasyon gerektiren sorular mıdır? Eğer öyleyse nedenini açıklar mısınız?
  - ✓ Soru kökleri mi yoksa seçenekleri mi öğrencilerin fazlaca yoğunlaşmalarını gerektirmektedir? (sayısal/sözel)
- o Çoktan seçmeli soruları öğrencinizin bilgilerini en iyi şekilde yansıtabilecekleri soru çeşidi olarak görüyor musunuz? Bu konuda neler söyleyebilirsiniz?
- o Çoktan seçmeli sorularda öğrencilerin tüm gayretini gösterebildiklerini düşünüyor musunuz?
  - ✓ Soruları rahatlıkla anlayabilirler mi?
  - ✓ Cevap şıklarını kolayca anlayabilirler mi?
  - ✓ Cevap şıkkını hızlı mı yoksa yavaş mı seçerler?
  - ✓ Cevap şıklarını görüyor olmaları sizce dezavantaj mıdır? Neden?
  - ✓ Cevapları görmeseler çözüm esnasında kendilerini güvende hissederler miydi?
  - ✓ Cevapları görmeseler çözüm esnasında daha mı iyi performans gösterirler? Niçin?
- o Öğrenciler zor olan çoktan seçmeli bir soruyla karşılaştıklarında, çözüme rahatlıkla ya da kısa zamanda ulaşamayacaklarını anladıklarında bile o soru üzerinde çalışmaya devam ederler mi?
  - ✓ Israrla soruyu çözmeye devam mı ederler yoksa yeni soruya mı geçerler?
  - ✓ Eğer ilk denemede çözemezlerse pes ederler mi?
  - ✓ Cevabı bulamamaları ya da cevapların hatalı olduğunu düşünmeleri öğrencilerin sonraki sorular için gayretlerinde kaybetmesine neden olur mu?
  - ✓ Hangi durumlarda pes ederler?
  - ✓ Diğer soruları bitirdikten sonra çözemedikleri soruya geri dönerler mi?

- Öğrencilerinizin açık uçlu bir soruyu çözerken neleri tecrübe ettiğinden bahseder misiniz?
  - ✓ Birden fazla yolla mı çözmeyi tercih ederler?
  - ✓ Öğretmenlerinin öğrettiği yolla mı soruyu çözmeyi tercih ederler? Neden?
  - ✓ Kendilerine yeni bir yol oluştururlar mı?
  - ✓ Neye göre kendilerine yeni bir yol oluştururlar?
  - ✓ Sizce birden fazla yolla çözmenin avantajları/dezavantajları neler olabilir?
- Açık uçlu bir soruyu daha iyi anlayabilmek için başka kelimelerle yeniden ifade ederler mi?
  - ✓ **Başka kelimelerle ifade etmelerinin ne gibi faydası olabilir? Bilişsel ya da duyuşsal?**
  - ✓ Daha iyi ifade edebilmek için neler yaparlar?
  - ✓ Nasıl bir strateji izlerler?
- Açık uçlu soruları çözmek öğrencilere çok zaman kaybettirir mi? Bu konuda ne düşünüyorsunuz?
  - ✓ Sizce bu tip soruların hangi özellikleri zaman kaybına neden olmaktadır?
  - ✓ Problem durumunun verilmesinde mi yoksa çözüm yolunun karar verilmesinde mi daha çok zaman harcamaktadırlar?
  - ✓ Sabit bir metodunun olmaması zaman açısından öğrencileri nasıl etkilemektedir?
  - ✓ Sabit cevabının olmaması, muhtemel cevapların varlığı, farklı yol ve değişik seviyelerde çözülebilmeleri zamana fayda/zarar bağlamında nasıl etki etmektedir?
- Açık uçlu bir soruyu öğrencileriniz daha iyi anlayabilmek için tekrar ederler mi? Neden?
  - ✓ **Soruyu tekrar etmek ya da yeniden organize etmek bilişsel ya da duyuşsal bir katkı sağlamakta mıdır?**
  - ✓ Ne tür yöntem ve stratejilerle tekrar ederler?
  - ✓ Sorudaki bilgileri yeniden organize etmeye ihtiyaç duyarlar mı?
  - ✓ Açık uçlu bir sorudaki bilgileri seçme ve organize etmede nasıl bir yöntem kullanırlar?

- Açık uçlu sorularda çözüm esnasında işlemlerini kontrol etme ihtiyacı duyarlar mı? Ne kadar sıklıkla kontrol ederler?
  - ✓ **Sizce öğrencilerin öz kontrolü onlara ne fayda sağlamaktadır?**
- Açık uçlu soruda işlemlerini nasıl kontrol ederler?
  - ✓ Niçin açık uçlu sorular çözüm esnasında öğrencilerin kontrolünü gerektiriyor?
  - ✓ **Kontrolün bilişsel ya da duyuşsal bir faydası var mıdır? Varsa nedir?**

- Açık uçlu bir soruyu çözerken öğrenciler yanıtların doğruluğunu nasıl test ederler?
  - ✓ Doğruluğu hakkında bir yargıya nasıl varırlar?
- Açık uçlu soruyu çözme sürecinde kendilerine ne kadar iyi yapıp yapmadıklarını sorarlar mı? Niçin?
  - ✓ Niçin kendi öz kontrollerini sağlamak onlar için önemlidir?
- Açık uçlu bir soruyu çözerken hatalarını rahat görebilirler mi?
  - ✓ Genellikle ne tür hatalar yaparlar?
  - ✓ Hatalarını düzeltirler mi?
  - ✓ Hatalarını düzeltmede nasıl bir yol izlemeyi tercih ederler?
  - ✓ **Hatalarını görebilmeleri ve düzeltebilmelerin öğrenciye bilişsel ya da duyuşsal katkısı nedir? Hangi boyutlarda fayda sağlamaktadır?**
- Açık uçlu bir soruda çözümün yolunda gidip gitmediğini kendilerine sorarlar mı? Bu konuda neler söyleyebilirsiniz? (sayısal/sözel)
  - ✓ Çözüm esnasında kendi hatalarını kolayca görebilirler mi?
  - ✓ Eğer hatalarını göremezlerse nasıl bir yol izlerler?

- ❖ Öğrencilerin açık uçlu sorulardan oluşan bir sınav için çok fazla çalışmaları gerektiğini düşünüyor musunuz? Niçin?
  - ✓ Çözmek çok performans gerektirir mi?
- ❖ Açık uçlu bir soruyu çözerken doğru sonuca ulaşıp ulaşamayacaklarını kestirebilirler mi?
  - ✓ Başarısız olma ihtimali öğrencilerde ne tür duygular yaratır?
  - ✓ Başarısız olma ihtimali öğrencilerde hayal kırıklığı ya da endişe yaratır mı?
- ❖ **Açık uçlu soruların öğrencilere duyuşsal boyuttaki katkısı ya da olumsuz etkisi ne olabilir?**
- ❖ Zaman zaman açık uçlu bir soruyu çözerken performanslarından dolayı mutluluk, tatminkârlık, yetersizlik ya da pişmanlık hissederler mi?
  - ✓ Bu tarz sorularla uğraşmak sizce öğrencilere kolay geliyor mudur?
- ❖ Zaman zaman başarısız olduklarında endişe oluşur mu? Neler söyleyebilirsiniz?
- ❖ Açık uçlu bir soruyu çözerken gösterdikleri performansı nasıl test ederler?
  - ✓ Soruyu anlama ve çözebilme konusunda yeterli pratikleri var mıdır?
  - ✓ Performanslarını nasıl test ederler?
  - ✓ Soruyu çözerken kendilerine güveniyorlar mıdır?

- o Açık uçlu bir soruyu çözebilmek için öğrencilerin ne kadar çalışması gerektiğini düşünüyorsunuz?
  - ✓ Açık uçlu bir soruyu çözebilmek için çok çalışmaları gerekiyor mu? Neler söyleyebilirsiniz?

- ✓ Açık uçlu sorularda çok pratik yapmanın ne gibi faydaları olabilir? Ne tür pratikler?
- ✓ Çözüm esnasında veya konuyu öğrenirken çok fazla efor harcatan bir soru tipi midir? Bu konuda neler söyleyebilirsiniz?

o **Açık uçlu soruların öğrencilere duyuşsal boyutlardan biri olan "efor" açısından katkısı ya da olumsuz etkisi ne olabilir?**

o Açık uçlu sorular sizce öğrenciler için fazla konsantrasyon gerektiren sorular mıdır? Eğer öyleyse nedenini açıklar mısınız?
- ✓ Problem durumu mu yoksa olası çözüm yollarına karar verme süreci mi öğrencilerin fazlaca yoğunlaşmasını gerektirmektedir?

o Açık uçlu soruları öğrencilerinizin bilgilerini en iyi şekilde yansıtabileceği soru çeşidi olarak görüyor musunuz? Bu konuda neler söyleyebilirsiniz?

o Açık uçlu sorularda öğrencilerin tüm gayretinizi gösterebildiklerini düşünüyor musunuz?
- ✓ Soruları rahatlıkla anlayabilirler mi?
- ✓ Sorunun türünü kolayca seçebilirler mi?
- ✓ Çözüm yollarını hızlı mı yoksa yavaş mı seçerler?
- ✓ Tek bir çözüm yolu olmaması öğrenciler için dezavantaj mıdır? Neden?
- ✓ Önlerinde cevap şıkları olmadığından çözüm esnasında kendilerini güvende hissederler mi?
- ✓ Eğer cevap şıklarını görebilselerdi gayretlerinde nasıl bir değişim meydana gelirdi? Daha mı az efor harcarlardı? Niçin?

o Öğrenciler zor olan açık uçlu bir soruyla karşılaştığında, çözüme rahatlıkla ya da kısa zamanda ulaşamayacaklarını anladıklarında bile o soru üzerinde çalışmaya devam ederler mi?
- ✓ Israrla soruyu çözmeye devam mı ederler mi yoksa yeni soruya mı geçerler?
- ✓ Eğer ilk denemede çözemezlerse pes ederler mi?
- ✓ Cevabı bulamamaları, farklı çözüm yollarının çalışmadığını görmeleri ya da değişik seviyelerdeki çözüm yollarını fark edememeleri öğrencilerin sonraki sorular için gayretinde bir kayba neden olur mu?
- ✓ Hangi durumlarda pes ederler?
- ✓ Diğer soruları bitirdikten sonra çözemedikleri soruya geri dönerler mi?

Appendix G: METU Ethical Form

Sayı: 28620816/119 - 206

03.03.2014

Gönderilen : Prof. Dr. Ercan KİRAZ

Eğitim Bilimleri

Gönderen : Prof. Dr. Canan Özgen

IAK Başkanı

İlgi : Etik Onayı

Danışmanlığını yapmış olduğunuz Eğitim Bilimleri Bölümü öğrencisi Bengi Birgili'nin "Çoktan Seçmeli Sorulara Alternatif Olarak Açık Uçlu Sorular: Türk Sınav Sisteminde İkilem" isimli araştırması "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

03/03/2014

Prof.Dr. Canan Özgen
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

Appendix H: Thesis Copy Permission Form

Tez Fotokopisi İzin Formu

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ☐

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı :
Adı   :
Bölümü :

TEZİN ADI (İngilizce) :

TEZİN TÜRÜ : Yüksek Lisans ☐   Doktora ☐

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ☐

2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☐

3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. ☐

TEZİN KÜTÜPHANEYE TESLİM TARİHİ:

Çoktan Seçmeli Sorulara Alternatif Olarak Açık Uçlu Sorular: Türk Sınav Sisteminde İkilem

GİRİŞ

Eğitimde öğrenci başarısını ölçme, eğitim sürecinde devamlılık ve etkililik için ciddi bir girdi sağlar. Ölçme ve değerlendirme, öğretim uygulamalarına destek geri dönüt sürecidir ve bu süreç boyunca öğretim kalitesi istenilen sonuçların başarılı olup olmadığına karar vermek için değerlendirilebilir. Eğer eğitim sürecinde tüm girdiler anlamlı bir öğrenme çıktısına dönüştürülebilirse, sürecin etkili olup olmadığına karar verilebilir. Günümüzün öğretme ve öğrenmede acilen ilgilenilmesi gereken en önemli problemlerinden biri eğitim süreci için geri dönüt sağlamada öğrenme ürünü olarak adlandırılan çıktının düzgün ölçümüdür (Berberoğlu ve İş-Güzel, 2013). Bu sebeple, birçok ülkede ölçme ve değerlendirme üzerine devam eden geniş çaplı araştırmalar mevcuttur. Öğrenme sürecinin, öğrenci başarısını doğrulamak ve kaliteli öğrenme ürünlerinin gerçekleşip gerçekleşmediğini görmek için yapılan öğrenme sürecine yapılan yatırımları araştırmak konusunda ölçme-değerlendirme ilintili projeleri geliştirirken daha etkili olacağı konusu da tartışılmaktadır (Gömleksiz ve Türel, 2005; Uşun, 2004; Yıldız ve Uyanık, 2004). Diğer ülkelerde olduğu gibi, Türkiye'de de uzun süredir birçok araştırma bulgusu vardır ama sürecin ürüne dönüştürülmesinin ölçme ve değerlendirmesinde hızlı ve güncel değişiklikler dikkati çekmiştir. Ani ve temelsiz hazırlanan merkezi sınavın başarıyı etkili ölçüp ölçmediği ya da daha yerel ve uzun dönemli ölçme sürecinin başarıyı ölçmede ve öğrenme ürünlerinde daha etkili olup olmayacağı ile ilgili cevaplanması gereken çok soru vardır. Fakat yine de eğitimin merkezi olduğu ülkelerde, merkezi kurumların etkili ölçme ve değerlendirme süreci tasarlanmasında, sürecin sürdürülmesinde ve takiben değerlendirilmesinde sorumlu olduğu yaygın bir düşüncedir.

Türk sınav sisteminin tarihi değerlendirildiğinde, ölçme ve değerlendirmenin hızlı değişiklikleri açıkça görülebilir. Sınavlar ve düzenlemeler ilköğretimden

üniversite girişine, hatta yüksek lisans programlarına girişten akademik terfilere kadar yirmi yıllık süreçte değişmiştir. Örneğin, kısa bir sure önce, Milli Eğitim Bakanlığı (MEB) tarafından ileri sürülen yeni "Kazak Modeli" ile sonuçtan ziyade sürece odaklanan yeni bir sınav ortaya çıkmıştır. Bu durum parça parça notlandırma sonucundansa bütün bir ölçme değerlendirme sürecine vurgu yapar ve bu model özellikle öğretmenlerin, öğrencilerin ve toplumun dikkatini çekmektedir. Okullarda öğretmenler tarafından uygulanan bir ya da daha fazla sınavın bakanlık tarafından idame ettirileceği açıklanmıştır. Yeni kararla birlikte, akademik yılın sonunda uygulanan sınavlar sömestr boyunca yapılacak ve böylece ölçme değerlendirme sorumluluğunun bir kısmı öğretmenlerde olacaktır. Şimdi ise alternatif sınavların eski sınavlara gerçekten alternatif olup olmadığı sorusu ortaya çıkmaktadır. Hiçbir sınavın tek başına mükemmel olamayacağı ve yine en doğru sonuç belirleyicisi olamayacağı hatırlanması gereken bir noktadır. Sonuç olarak, öğrenme sürecinde öğretme-öğrenme süreci ile tamamlanan tekdüze bir sınav uygulamasının yerine, farklı içerik ve kapsamla bütünleşmiş sınavların daha etkili olabileceği düşünülebilir.

Bir formun diğerinden daha iyi olabileceği gibi, Türkiye'deki sınav sisteminin soru formatında tarih boyunca hızlı değişiklikler yapılmıştır. Yine de ana sorun sadece bir soru formatına değil, aynı zamanda çok boyutluluk özelliğine bağlılıktır. Örneğin, çocuklarımız, zamanlarının ve enerjilerinin çoğunu çoktan seçmeli soruları çözmek için kullanır. Fakat eğitim siteminin sağlamakla ve ölçmekle sorumlu olduğu problem çözme yetileri dışında istenilen yetenekler, yetiler ve tutumlar bir şekilde göz ardı edilmekte ya da gözden kaçırılmaktadır. Hemen hemen her soru formatının kısıtlamaları vardır; çoktan seçmeli sorular, üretemeyen, zengin bir fikir dünyası, bakış açısı olmayan, sadece belli bir noktaya eğilen, olayın diğer boyutlarını göremeyen öğrencilerin artmasına sebep olur. Diğer yandan, açık uçlu sorular zor ve adaletsiz görünür (Berberoğlu ve İş-Güzel, 2013). Bu bağlamda, soru formatlarının istenmeyen evrimi ile uğraşmaktansa, koşulların ve soru formatlarının amaçlarının belirli hedef ya da amaçlar için faydalı ve uygun olması boyutu göz önünde bulundurulmalıdır.

Çoktan seçmeli ve açık uçlu soru formatındaki soruların çözümü boyunca, sınava girenler cevaba ulaşmak için süreç boyunca biraz biliş ötesi strateji kullanmalıdır. Ne hissettikleri ise daha iyi bir çözüm süreci için göz önünde bulundurulması gereken diğer bir özelliktir. Bu sebeple bilişsel strateji ve biliş ötesi öz kontrol özellikleri ve duygusal etmenin endişe ve çaba özelliği sınava girenler tarafından kullanılabilir. Fakat öğrenciler tarafından kullanılan bu yeteneklerin ölçüsü çoktan seçmeli ve açık uçlu soruların çözüm sürecinde değerlendirilebilir. Bilişsel strateji, istenilen stratejinin belirlenen adımlarda tamamlanamaması durumundaki öğrenme yapısını ima eder. Bilişsel strateji için, öğrencilerin mantık ve planlama temellenmeleri düşünülebilir. Öz değerlendirme, öğrencilerin çoktan seçmeli ve açık uçlu sorular üzerinde çalışırken kendi düzenledikleri davranış farklılıkları olarak anlaşılabilir. Ayrıca, iş başındaki sıkı çalışmalarını ve format maddesini çözerken vazgeçmemelerini belirten hata ve çaba performanslarının belirttiği bilişsel kaygıları ya da sıkıntıları, öğrencilerin endişeleri; farklı yapılarda birbirinden üstün olan çoktan seçmeli ve açık uçlu sorularla anlaşılmalıdır.

Bu çalışmanın amacı; iki sınav arasındaki benzerlik ve farklılıklara, farklı içerik ve süreçler içinde ışık tutmaktır. Önceki tartışmalarda belirtildiği gibi bu çalışma, açık uçlu ve çoktan seçmeli soruların biliş ötesi ve duygusal açıdan farklı etkilerini ortaya çıkarmayı amaçlamaktadır. Bu hedefleri gerçekleştirmek için, nitel araştırma metotlarından olgu bilim yaklaşımı uygulanmaktadır ve çalışmayı yönlendiren bir temel soru bulunmaktadır:

"Ortaokul öğrencileri için hazırlanmış olan çoktan seçmeli ve açık uçlu sorular biliş ötesi ve duygusal boyutlar bazında öğretmen, öğrenci ve akademisyenler tarafından nasıl algılanmaktadır?"

Ana çalışma sorusuna rehberlik eden alt sorular şunlardır:

(a)   Açık uçlu ve çoktan seçmeli soruların kullanımı,

(b)   Açık uçlu ve çoktan seçmeli soruların zayıf ve güçlü yanları,

(c)   Öz kontrol ve bilişsel strateji yolu ile biliş ötesi sınıflandırması ve çaba ve endişe yoluyla duygusallığın sınıflandırılması,

(d)   Açık uçlu ve çoktan seçmeli soruların büyük çaplı ölçmelerde ortaokul öğrencileri, öğretmenler, akademisyenler açısından uygunluğu.

YÖNTEM

Örneklem ve İşlem

Araştırmanın çalışma grubunu 2013-2014 eğitim öğretim yılında İstanbul ve Ankara'da öğrenim gören 8. sınıf öğrencileri, ortaokul branş öğretmenleri ve üniversite akademisyenleri oluşturmaktadır. İstanbul Çapa Atatürk İlköğretim Okulu ve Şehit Çavuş Selçuk Gürdal Yatılı Bölge İlköğretim Okulu'nda öğrenim gören 8. sınıf öğrencisi ile Ankara Nesibe Aydın Okulları'nda öğrenim gören toplam 10 öğrenci oluşturmaktadır. Öğrencilerin 4'ü kız, 6'sı erkektir. Örneklem grubundaki öğrencilerin açık uçlu ve çoktan seçmeli sorular hakkında önceden deneyime sahip olmaları gerekliliği göz önünde bulundurularak amaçlı örneklem ve onun alt kategorilerinden olan ölçüt örneklem yöntemi kullanılmıştır. Katılımcıların hepsi araştırmada gönüllü olarak yer alıp görüş bildirmişlerdir.

Katılımcı öğretmenlerin branşları Matematik, Fen bilimleri, İngilizce, Sosyal bilgiler, Türkçe ile Din kültürü ve Ahlak bilgisidir. Öğretmenlerin 4'ü erkek, 12'si kadın olmak üzere toplam 16 öğretmen araştırmaya katılmıştır. Devlet okullarından katılan öğretmenlerin 2'si erkek, 8'I kadın olmak üzere 2 ile 23 yıl arasında deneyime sahiptir. Özel okuldan katılan öğretmenlerin ise 2'si erkek, 4'ü kadın olmak üzere 8 ile 21 yıl arasında deneyime sahiptir. Öğretmenlerin çoğu Türkiye'de yıllar boyu değişen sınav sistemine aşina ve birkaçı da Milli Eğitim Bakanlığı tarafından soru yazma komisyonunda çalışmış kişilerdir. Ayrıca katılımcı öğretmenlerin hepsi sınıflarında kendi hazırladıkları sınavlarda veya geniş ölçekli sınav uygulamasında çoktan seçmeli ve açık uçlu soruları uygulamış kişilerden oluşmaktadır.

Devlet üniversitesi akademisyenlerinden oluşan diğer gönüllü katılımcılar ise ölçme ve değerlendirme, eğitim programları ve öğretim, İngiliz dili eğitimi, fen

eğitimi ve ilköğretim matematik öğretimi alanlarından seçilmiştir. Akademisyenlerin 1'i erkek 5'i kadın olmak üzere 4 ile 14 yıl arasında deneyime sahiptir.

Bu çalışmada, 8. sınıf öğrencisi, branş öğretmeni ve akademisyenden oluşan katılımcıların çoktan seçmeli ve açık uçlu sorular hakkındaki ortak deneyim, görüş ve algılarını ortaya koymak için olgu bilim yöntemi kullanılmıştır. Görüşler, üst biliş olgusunun iki alt boyutu olan bilişsel strateji ve öz kontrol ile duygu (duyuşsal) olgusunun iki alt boyutu olan endişe ve çaba çerçevesinde belirtilmiştir. Çalışmada normal mülakattan ziyade algı ve görüşleri derinlemesine inceleyip sunmak için katılımcılarla bilişsel görüşmeler gerçekleştirilmiş, özel okul öğretmenleri ile tek bir oturumda tüm alt boyutları tartışabilmek için odak grup görüşmesi yapılmıştır.

Veri Toplama Araçları

Çalışmada yarı yapılandırılmış görüşme formları kullanılmıştır. Öğrenci, öğretmen ve akademisyenden oluşan her bir katılımcı grubu için ayrı görüşme formları hazırlanmış ve görüşme sorularının içeriği O'Neil ve Brown (1998)'un çalışmasında yer alan bilişsel strateji, öz kontrol, endişe ve çaba alt boyutlarına ait olası becerilerin bir kısmından uyarlanmıştır. Veri toplama yöntemi olarak bilişsel görüşmelerde kullanılacak olan görüşme soruları önceden üç uzman tarafından kontrol edilmiş, pilot çalışma yapılmış ve ölçek katılımcılardan gelen dönütler ile geçerlik ve güvenirliği sağlamak için çalışma boyunca geliştirilmiştir.

Verilerin Analizi

Görüşmeler kayıt altına alınıp transkripsiyonu yapıldıktan sonra yorumlayabilmek için veriler kodlanmış ve örüntü içeren paralel ifadeler yirmi üç kategori altında birleştirilerek dört ana tema altında sıralanmıştır. Ardından nitel veri analizi nicelleştirilerek ifadeler betimsel ve yordamsal olarak sunulmuştur.

BULGULAR VE TARTIŞMA

Bu çalışma temel araştırma sorusu olan "Ortaokul öğrencileri için hazırlanmış olan çoktan seçmeli ve açık uçlu sorular biliş ötesi ve duygusal boyutlar bazında

öğretmen, öğrenci ve akademisyenler tarafından nasıl algılanmaktadır?" sorusunu araştırmıştır. Çalışma, öğrencilerin, öğretmenlerin ve akademisyenlerin bakış açılarına göre, açık uçlu soru formatının sekizinci sınıf öğrencilerinin bilişsel ve öz kontrol stratejilerinin çoktan seçmeli soru formatına göre daha fazla aktif hale getirebileceğini göstermiştir. Öğrencilerin, öğretmenlerin ve akademisyenlerin deneyimlerine dayanan çalışma sonuçları şu şekilde belirtilmiştir: 1) açık uçlu sorularda öğrenciler kendi oluşturdukları cevapları ya da çözüm sonuçlarını kullanmayı tercih etmektedir; 2) çok sayıda farklı bilişsel strateji kullanılmaktadır; 3) çocuklar soru köküne karşı yeniden ifade etme eğilimindedir; 4) öğrenciler soruyu anlama noktasında daha fazla zaman harcamaktadır ve 5) soruyu ya da çözüm aşamalarını yeniden okumayı tercih etmektedir. Ayrıca katılımcıların ortak algıları kanıtlamıştır ki öğrenciler: 1) kendi işlerini daha fazla kontrol etmektedirler; 2) kendi çözüm aşamalarının üstünden geçmektedir ya da açık uçlu ve çoktan seçmeli sorulara eşit şekilde cevap vermektedir; 3) cevaplarının doğruluğunu yargılamaktadır; 4) bilinçli olarak ne kadar doğru yaptıklarını sorgulamaktadır; 5) hatalarını bulma ve düzeltme eğilimindedir; 6) çözümün yolunda gidip gitmediğini kendilerine hatırlatmaktadır. Böylece, açık uçlu soruların çocukların bilişsel strateji ve öz kontrol yetenekleriyle ilgili biliş ötesiliğini çoktan seçmeli sorulara göre daha fazla yükselttiği de belirtilebilir.

Ayrıca endişe ve çaba açısından bu çalışma hem açık uçlu soru hem de çoktan seçmeli soruların öğrenciler üzerinde eşit şekilde kaygıya sebep olduğunu göstermiştir. Formatlar göstermiştir ki: 1) çoktan seçmeli sorular negatif duyguları arttırabilir; 2) hayal kırıklığı ve pişmanlık duyguları çoktan seçmeli sorularda daha yoğundur, fakat 3) keşke daha fazla çalışmış olsaydım şeklindeki pişmanlık söylemi açık uçlu sorularda daha fazladır; 4) mutsuz hissetme açık uçlu ve çoktan seçmeli sorularda da gözlenmiştir; 5) sınavda zayıf performans gösterme kaygısı aynıdır; 6) düşük özgüvene sahip olma ve 7) rahatsızlık hissi açık uçlu sorularda daha yüksek görünmektedir. Fakat bu bulgular odak grup görüşmeleri ile birleştiğinde, endişe durumunun çoktan seçmeli sorularda ortaya çıkma yatkınlığının görülebilir. Katılımcılar çoktan seçmeli soruların açık uçlu sorulara göre endişe kaygısını daha

fazla tetiklediği konusunda hemfikir olma eğilimindeler. Diğer bir yandan, çaba açısından, çalışma göstermiştir ki öğrenciler 1) sıkı çalışmaya ve 2) açık uçlu sorularda çalışmaya devam etmeye çalışmaktadırlar; fakat açık uçlu sorularda daha kolay en iyi şekilde odaklanabilmekte; 4) açık uçlu sorularda daha fazla çaba göstermekte ve bilgilerini yansıtabilmekte, ama 5) çabalarını sürdürmek için çoktan seçmeli sorularda kolay pes etmemektedirler. Tüm etkenler dikkate alındığında, açık uçlu soruların çoktan seçmeli sorulara oranla duyuşsal bir yapı olan çabayı daha fazla hareketlendirebileceği vurgulanmaktadır.

Böylece bu çalışmanın açık uçlu soruların bilişsel stratejiyi, öz kontrolü ve çabayı çoktan seçmeli sorulara göre daha fazla ilerlettiği, ama açık uçlu soruların endişe duygusunu arttırdığı ve dolaylı olarak biliş ötesini ve duyuşsallığı etkilediği üzerine odaklandığı söylenebilir. Bu çalışmanın yaklaşımı ve felsefesine göre, katılımcıların çoktan seçmeli ve açık uçlu sorular olgusu hakkında geçmiş yaşam deneyimlerinin sayısından ziyade kalitesinin ortaya konma hedefi göz önünde bulundurulmuştur. Bu bağlamda, farklı çalışmalarda açık uçlu soruların öğrencilerin endişelerini arttırdığı belirtilse bile, bu çalışma sekizinci sınıfların çoktan seçmeli sorularda daha fazla endişe duyduklarını vurgulamaktadır. Bu durum Türkiye'deki standart sınavlar gibi büyük ölçüde uygulanan soru formatlarının kullanımı ile açıklanabilir.

Çalışmanın bulguları temasal ve öğrencilerle yapılan bilişsel görüşmelerden çıkan kodlar olarak analiz edilmiştir. Öğretmenlerin ve akademisyenlerin görüşleriyle veri üçleme tekniği ile desteklenmiştir. Çalışmanın tartışması bu temalara ve kodlara dayanmaktadır. Çalışmanın bazı sonuçlarının daha önce bahsedilen ilgili literatürle bağlantılı olduğu görülmektedir.

Araştırma alanındaki bazı çalışmalar çoktan seçmelilerin notlandırma kuralları konusunda benzer görüşleri öne çıkartmaktadır: yanlış cevap seçildiğinde puan kaybedilir ve herhangi bir cevap şans olarak görünür. Sonuç, analitik düşünmek yerine sayısal ya da rastgele seçimle denenebilir (Espinosa ve Gardeazabal, 2010). Bu yüzden çoktan seçmeli sorular, bu çalışmanın önerdiği bilişsel strateji alt

boyutları kapsamında, bilişsel hedeflere ulaştıran (Phakiti, 2003) bilişsel süreci yönetebilecek bir formattır çıkarımı yapılamaz.

Çoktan seçmeli ve açık uçlu soruların öğrencinin bilgisini eşit şekilde ölçtüğü konusunda bir fikir birliği olmadığını gösteren bazı çalışmalar da vardır. Açık uçlu sorular, öğrenciler şık elemeye yatkın olmadığı için daha güvenilirdir ve minimum tahmin yaklaşımı vardır. Çoktan seçmeli sorular ise ipucu olabilecek soru ve cevaplardan etkilenebilir. Tahmin sonucu alınan yüksek notlar çok muhtemeldir. Çoktan seçmeli sorular, bilginin izole haldeki test edilmesi olarak görünür ve gerçek dünya örneklerinde yüksek düşünme yetisini test etmede uygun olmadığına inanılır (Kastner ve Stangl, 2011; Lawrenz, Huffman ve Welch, 2000). Başka bir açıdan, Rodrigues (2003) çoktan seçmeli ve açık uçlu soruların eşit olmadığı ve farklı yapıları ölçümü ile sonuçlanan 67 meta analiz araştırma yöntemi üzerine çalışmıştır. Lakin bilginin hatırlama, anlama, uygulama ve analizi; ikisi ile de ölçülebilir. Çoktan seçmeli sorularda bilişsel strateji çeşitlerinin bulgularına dayanarak, eleme yöntemi en çok kullanılan strateji olarak bulunmuştur. Fakat açık uçlu soru içerisinde, çözüm sürecinde kontrol ve çıkarım yapma Espinosa ve Gardeazabal (2010) ve Kastner ve Stangl (2011) görüşleri doğrultusunda en çok kullanılan strateji olarak değerlendirilmiştir. Ayrıca Cheng (2004) katılımcıların fark yaratacak şekilde seçmeli cevabı olan soru formatlarında, yapılandırılmış açık uçlu cevabı olan soru formatlarına göre kelime eşleştirerek tahmin ve çıkarım yapmada –ki anahtar kelime yazımı çoktan seçmeli sorularda ilk beş stratejiden biridir- daha iyi performans gösterdikleri sonucunu elde etmiştir. Bulgular daha önceden bahsedilen algılara dayanarak desteklenmektedir.

Friborg ve Rosenvinge (2013) yaşları 25 ile 50 arasında 643 katılımcı ile Norveç'te açık uçlu soruların standart testler üzerindeki bilişsel ve duyuşsal boyutlar açısından yararları üzerine bir araştırma yapmışlardır. Bu çalışma çoktan seçmeli soruların sonunda yer alan açık uçlu soruların öğrencilerin davranışları ile ilgili geniş çaplı ve derin bir bilgi sağladığını belirtmiştir. Öğrenciler standart testin başlangıcının sonunda yer alan çoktan seçmeli sorulara rağmen anlamalarında artan bir cevaplamaya başlamış, ilginç bir şekilde açık uçlu soruya nasıl cevap vereceği

konusunda ilgili içeriği sağlamışlardır. Anlamak için harcanan süre de bu çalışmada vurgulanan diğer bir nokta. Hemen hemen benzer bir durum Friborg ve Rosenvinge (2013)'in çalışmasında bulunmuştur ancak o çalışmada bulgular nicel bir veriden elde edilmiştir. 13 ile 14 yaş arasındaki sekizinci sınıf öğrencilerini, öğretmenleri ve akademisyenleri de içeren katılımcıların yaşları bu çalışma ile ilgili değildir. 153 üniversite öğrencisinin, okuduğunu anlama konusunda biliş ötesiliği üzerine katıldığı başka bir çalışma da vardır. Çalışmaya göre katılımcılar, sadece soru kökü içeren ve açık uçlu cevap gerektiren sorularda hem soru kökü hem de cevap seçeneği içeren sorulara göre biliş ötesiliği ve biliş ötesi stratejiyi daha fazla kullanmaktadırlar. (Tabrizi ve Vafakhah, 2014). Fakat güncel çalışmadan farklı olacak şekilde katılımcılar farklıydı ve çalışmanın odak noktaları çok kısıtlıydı. Fakat alan yazınında bunun gibi daha birçok çalışma mevcuttur. Örneğin biliş ötesi becerilerinden biri olan bilişsel işlevin açık uçlu sorularda daha iyi çalıştığını gösteren çalışmalar da vardır (Hill ve Hannafin, 1996; Land, 2000; Roebers, 2006; Segedy, Kinnebrew ve Biswas, 2011; Wilson ve Hughes, 2011).

Özuru, Briner, Kurby ve McNamara (2013) tarafından yakın zamanda yürütülen içerik anlamasını ve eğitim ortamındaki öğrenmeyi açık uçlu ve çoktan seçmeli sorular ile nasıl ölçeceği konusundaki araştırma yürütülmüştür. Araştırmacılar çoktan seçmeli ve açık uçlu soruların anlamayı farklı şekilde nasıl değerlendirdiklerini anlamaya çalışmışlardır. Aynı sorunun iki versiyonu da kullanılmıştır. Çoktan seçmeli sorularda hedef bilgiden kaynaklı otomatik olarak bilginin geri çağrılmasının söz konusu olabileceği gösterilmiştir. Hedef bilgi sorulardan ya da seçeneklerden seçilebilmektedir. Çalışma, katılımcıların aktif kavrama becerisini kullanmadan şıklar arasındaki doğru cevabı başarılı bir şekilde seçebildiğini göstermiştir. Diğer yandan ise açık uçlu soruların kısıtlı ipucu bilgisi sağladığı görülmüştür.

Öz kontrol konusunda, Özuru ve diğerleri (2013) açık uçlu soruların, bir metinle ilgilenen okuyucuların öz açıklama pekiştireçlerinin aktif şekilde kullanımını arttırdığını belirtmiştir. Öz açıklamanın açık uçlu sorularda çoktan seçmelilere göre daha fazla olduğu bulunmuştur. Bu sonuç, bu yeni çalışmada da ortaya çıkan çalışma

kontrolü, doğruluğu yargılama, ne kadar iyi yapıldığını sorgulama, hataları düzeltme, yolda kalma bilinci gibi öz kontrol becerilerinin açık uçlu soru formatında daha sık gözlemlenebildiğini desteklemektedir. Ayrıca yeni çalışma açık uçlu soruların öz kontrolün, özellikle hata düzeltmenin çoktan seçmeliye göre daha fazla olduğunu belirtmektedir. Bu sonuç, Bridgeman (1992)'ın çalışması ile çakışmaktadır. Çoktan seçmeli soruların daha kolay olduğu maddelerin öğrenciler tarafından açık uçlu sorularda daha zor olarak düşünüldüğü açık uçlu ve çoktan seçmeli sorular arasında şok eden bir fark ortaya çıkarmıştır. Açık uçlu ve çoktan seçmeli soru format etkisinin hata düzeltme bağlamında daha yüksek olduğu tespit edilmiştir. Çoktan seçmeli soruların, öğrenciler tarafından yapılan hataları doğru olarak yansıtmadığı görülmüştür. Bu sonuç, bu çalışmanın öz kontrol temasının bir alt boyutunda çıkan sonuçlar ile benzerdir. Bridgeman (1992) tarafından yapılan çalışma GRE sınavına girmiş, 364 gönüllü katılımcıdan elde edilen nicel sonuçlar ile yürütülmüştür. Fakat sonuçlar, 10 sekizinci sınıf öğrencisi olmak üzere toplamda 26 katılımcıdan nitel olarak elde edilen verilerle yapılan bu çalışma ile çatışmaktadır. Ayrıca Nathan (2000) ile Segedy, Kinnebrew ve Biswas (2011) yaptıkları çalışmalarda öz düzenlemeli biliş ötesi strateji becerilerinden olan "cevap üzerinden geçme", "doğruluğu yargılama", "ne kadar iyi yaptığını sorgulama" gibi davranışların öğrencilerin kendi öğrenmelerinin kontrolünü güçlendirdiğini belirtmektedir. Bu beceriler bu araştırmada da öz kontrol stratejilerinin alt boyutları olarak karşımıza çıkmıştır.

Roeber (2006) açık uçlu soruların güçlü stratejik kararları motive ettiğini belirtmiştir. Deneysel çalışmaya katılan 142 katılımcıdan elde edilen sonuçlara göre, katılımcılar açık uçlu sorularda hassaslığı daha iyi kontrol edebilmekte ve verdikleri cevapların doğruluğunu gözlemleyebilmektedir. Yani açık uçlu sorularda çözümlerinin doğruluğunu daha yeterli kontrol edebilmektedirler. Bu yüzden, açık uçlu soruların çözümünde öz kontrol becerilerinden olan hataları düzeltme ve doğruluğu yargılama becerilerinin daha iyi çalışıyor olması hem Roeber'in çalışmasında hem de bu araştırmada ortak çıkan bir sonuçtur.

Açık uçlu ve çoktan seçmeli soru formatının duyuşsal açıdan ayrımsal etkileri üzerine birçok tez ve yayın bulunmaktadır (Krueger, 1999; Meijer, 2001; Nathan, 2000; Wilson ve Hughes, 2011). Meijer'in çalışmasında (2001) kaygılı duygular altında bilişsel sürecin gözlenemeyeceği açıklanmıştır. 14-17 yaşlarında üçüncü sınıf 136 lise öğrencisinin katılımı ile yapılan 9 aylık boylamsal çalışmada, negatif matematik performansının güven eksikliği ile ilişkili olduğu açıklanmıştır. Öğrencilerin güven sahibi olup olmadıkları bu çalışmada endişe kategorisinin bir boyutu olarak belirtilmiştir. Bu sonuç, 57 genç öğrenci ile çalışmış olan Wilson ve Hughes'in (2010) çalışması ile benzerdir. Ki çalışma bu araştırmanın da odak katılımcısı olan 8. sınıf öğrencileri ile yapılmıştır. Biliş ötesi inançlar daha çok 13 yaşındaki çocuklar tarafından oluşturulmaktadır ve endişe duygusu problem çözme özgüveni ile ters orantılıdır. Yani endişe arttıkça öz güven azalmaktadır. Ama bu sonuç, güven hissinin ve rahatlık hissinin açık uçlu sorularda sınav süresince düşük olduğunu belirten şu anki çalışma ile uyumlu değildir.

Son olarak, çoktan seçmeli soru formatında zaman, tutum ve performans üzerine çalışan Hlasny'nin (2014) sonuçları çocukların sınavda harcadıkları zaman ve sınavdan önce cevaplarını gözden geçirip geçirmedikleri üzerine odaklanmıştır. Çalışma üçleme yöntemiyle yürütüldüğünden şimdiki araştırmanın istenilen amacı ile uyumludur. Sonuçlar, çoktan seçmeli soruların çocuklardan cevaplarını daha sık kontrol etmesini talep etmekte olduğunu ve onların cevap vermeden önce soruları ya da cevapları yeniden okuma eğiliminde olduklarını belirtmektedir. Ayrıca çocuklar soruları anlamakta daha az zaman harcarken cevaplarını kontrol etmekte daha fazla zaman harcamaktadırlar. Diğer taraftan, bu tez çalışması sekizinci sınıf öğrencilerinin açık uçlu sorularda soruyu anlamakta daha fazla zaman harcadığını, çoktan seçmeli ve açık uçlu sorularda eşit şekilde cevaplarını kontrol etmeye önem verdiklerini ve açık uçlu soruları çözerken yeniden okuduklarını gösteren bir adım atmıştır. Bu yüzden, bu bakış açısı doğrultusunda, bu iki çalışma çoktan seçmeli ve açık uçlu soruların ayrımsal etkisinde farklı taraflardadır.

Yapılan çalışmalar hem çoktan seçmeli hem de açık uçlu soruların farklı yapıları ölçmekte kendi içerikleri bakımından avantaj ve dezavantajları olduğunu

göstermiştir. Bu çalışma açık uçlu ve çoktan seçmeli gibi meşhur iki soru formatında gerçekleştirilen performansların farklılık etkilerine uzanmıştır. Bu tez çalışmasının bazı sonuçları önceki çalışmaların sonuçlarının bir kısmını doğrular niteliktedir. O'Neil ve Brown (1998) tarafından yürütülmüş çalışma bilişsel strateji, öz kontrol, endişe ve çaba etkenlerini tümüyle içeren tek çalışmadır. Bu çalışma, açık uçlu soruların çoktan seçmeliye göre bilişsel stratejiyi arttırdığını, öz kontrolü azalttığını ve daha fazla endişe yarattığını dile getirirken, bu tez çalışması sadece bilişsel strateji konusunda bu çalışma ile eşleşmiştir; çünkü açık uçlu soruların daha fazla öz kontrol gerektirdiği ama çoktan seçmeliye göre daha az endişe yarattığı bulunmuştur. Diğer taraftan O'Neil ve Brown (1998) çoktan seçmeli ve açık uçlu sorularda eşit çaba bulurken, bu tez çalışması açık uçlu soruların çoktan seçmeliye göre daha fazla çaba gerektirdiğini göstermiştir. Bu çalışmanın alan yazınındaki bu boşluğu doğal ortamda toplanan nitel veri ile doldurmaya çalışırken, O'Neil ve Brown'un nicel taraf olarak iş gördüğü çıkarımı yapılabilir. Bu araştırmada temel amaç, belirli kavramsal çerçeve içerisinde bu çalışmayı Türkiye'ye sunmak ve Türkiye'deki ikilemde kalmış sınav sistemi tartışmalarına öz kontrol, bilişsel strateji, endişe ve çaba gibi dört boyuttan ışık tutmaktır.