



Examining the Evaluation of Current Secondary School Mathematics Textbooks in Türkiye from Teachers' Perspectives: The High School Entrance Exam (LGS) and New-Generation Questions

Semra POLAT

Muş Alparslan Üniversitesi, Muş, Türkiye
<https://orcid.org/0000-0001-9815-8225>

s.polat@alparslan.edu.tr

Type: Research Article (Received: 12.03.2025 - Accepted: 26.05.2026)

Abstract

The Türkiye Century Maarif Model curriculum was adopted in Türkiye in 2024. Identifying the problems in existing mathematics textbooks plays an important role in the development of new mathematics textbooks following the implementation of this curriculum. Therefore, the aim of this study is to examine secondary school mathematics teachers' evaluations of Ministry of National Education (MoNE) secondary school mathematics textbooks (grades 5–8). This study was conducted using a case study design, one of the qualitative research methods. The research was carried out during the spring semester with 19 secondary school mathematics teachers working in public secondary schools located in the city center of a province in western Türkiye, selected through convenience sampling. Data were collected using a written opinion form consisting of open-ended questions and analyzed through content analysis. The findings revealed that secondary school mathematics teachers most frequently evaluate textbooks in terms of their alignment with the high school entrance exam (LGS) and new-generation questions. In addition, teachers offered numerous suggestions for the improvement of mathematics textbooks.

Keywords: LGS, Maarif Model Curriculum, Mathematics Teachers, Mathematics Textbooks, New Generation Questions



Introduction

Mathematics, which forms the basis of many disciplines, is considered one of the most important courses in education systems worldwide (Öztürk & Coşkun, 2022). Mathematics, which has indispensable importance around the world, is a field in which students are expected to achieve high levels of success in international examinations such as PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study). In addition, mathematics education gains importance because it contributes to the development of students' reasoning, analysis, and higher-order thinking skills. Despite this, as in many countries, many students in Türkiye cannot achieve the desired level of success in mathematics education (Tall & Razali, 1993, as cited in Tatar & Dikici, 2008). This situation raises questions about the processes students experience during the instructional process and the effective teaching materials and methods used in mathematics classes. Among these materials, textbooks, which are the most frequently used teaching materials in the instructional process, emerge as one of the main issues that should be addressed. In other respects, in order to increase student achievement, the entrance examination from secondary school to high school is undergoing revisions in our country. Currently, the High School Entrance Exam (LGS) consists of questions referred to as new generation (skill-based) questions. The purpose of changing the type of these questions is to enable students to engage with questions based on understanding, interpretation and reasoning, similar to those used in international assessments such as PISA and TIMSS. In this context, students' engagement with such questions is directly related to the content structure of textbooks. Accordingly, teachers come to the forefront as individuals who can evaluate textbooks from multiple perspectives.

High School Entrance Exam and New Generation (Skill-Based) Questions in Türkiye

The changing and developing world has brought about numerous developments in fields such as technology, science, and education. In the development process of education, the first step is to ensure that the education system is updated in line with the requirements of the age in order to adapt to this changing world. The second step involves disseminating these developments to society as a whole. In this respect, educational institutions, curricula, and measurement and evaluation methods, which are among the most important components of education, should be developed and implemented according to contemporary needs. Along with curricula updated in accordance with current conditions, changes have also been made in the measurement and evaluation methods applied in education. In this context, there has been a shift toward assessment approaches that measure skills as well as knowledge (Bulut, Ceylan, & Ceylan, 2022). Accordingly, a new high school entrance exam, the High School Entrance Exam (LGS), has been implemented since the 2017–2018 academic year to address problems such as students' low performance in international assessments and their difficulty in applying classroom knowledge to real-life situations. The LGS aims to assess students' abilities in reading comprehension, analytical thinking, drawing conclusions, and critical thinking (Ministry of National Education [MoNE], 2018). With the introduction of the LGS, the concept of new-generation (skill-based) questions has become prominent in Türkiye. The influence of international assessments such as PISA and TIMSS can be considered effective in the adoption of this approach. These question types aim to measure various skills, including analytical reasoning, critical thinking, and drawing conclusions through analysis (MEB, 2018). New-generation questions, which are relatively limited in the literature, have begun to



be addressed in recent studies (Atasoy, 2019; Dolapçioğlu, 2020). As these skill-based questions differ from traditional question types, they are also referred to as non-routine problems by some practitioners, including teachers and students (Tortop, Cumalı, Çelenli, & Taşpınar-Şener, 2022). In this context, considering the characteristics of routine and non-routine problems, routine problems are defined as problems encountered in daily life that involve the application of a simple algorithm or procedure (Altun, 2011; Santos-Trigo & Camacho-Machín, 2009). These problems can be solved using familiar methods without requiring extensive thinking from students and are used in the instructional process to improve students' basic operational competencies (Stanic & Kilpatrick, 1989). Non-routine problems, on the other hand, enable students to develop higher-order cognitive skills such as reasoning (García, Boom, Kroesbergen, Núñez, & Rodríguez, 2019), critical thinking (Feriyanto & Punti, 2020), relational thinking, the use of multiple solution methods, analysis, and interpretation (Lee, Yeo, & Hong, 2014). These problems require students to employ heuristic strategies in order to understand and solve them (Firdaus, Kailani, Bakar, & Bakry, 2015). In addition, non-routine problems allow students to use diverse and sophisticated approaches involving multiple representations, such as drawing figures, using diagrams, and constructing tables (Kurniati & As'ari, 2019; Lee, 1982). Therefore, since 2018, new-generation (skill-based) questions have been addressed by the Ministry of National Education as questions that aim to promote understanding, interpretation, and analysis of information, encouraging students to think within real-life contexts rather than relying on memorized knowledge.

The Strong Side of The Study

In Türkiye, the Turkish Century Maarif Model Curriculum was adopted in 2024, marking the completion of the fifth curriculum revision process over the past 20 years. Following this stage, a key question arises regarding the curriculum to be implemented gradually: How will mathematics textbooks be shaped during this revision process? In the preparation of these new textbooks, many stakeholders, such as textbook authors, teachers, curriculum developers, and academics, will take active roles. At this point, identifying the deficiencies in mathematics textbooks used in previous years and taught in schools emerges as a critical element. The evaluation of both the strengths and weaknesses of mathematics textbooks primarily takes place during instructional practice, and the individuals best positioned to make objective evaluations in this process are mathematics teachers. As will be discussed in the following section, limited research has been conducted on this issue over the past five years. Therefore, the main problem addressed in this study is the scarcity of research focusing on the evaluation of mathematics textbooks during this period. Such evaluations can contribute to the development of mathematics textbooks aligned with the Turkish Century Maarif Model Curriculum. Accordingly, identifying the problems in previously used mathematics textbooks is essential for the preparation of new and improved textbooks. In this respect, the strength of the present study lies in its aim to provide a detailed evaluation of mathematics textbooks from the perspectives of mathematics teachers. By addressing a gap in the literature, the study seeks to contribute to the development of higher-quality mathematics textbooks.



Studies Conducted on The Evaluation of Mathematics Textbooks by Mathematics Teacher in Türkiye

In Türkiye, the mathematics curriculum was revised again in 2024. The Türkiye Education Model Curriculum, prepared with great effort, will be implemented gradually. Accordingly, the design of new mathematics textbooks across grade levels will also be gradual. Research conducted to date will be of critical importance in the development of mathematics textbooks aligned with the curriculum. As a matter of fact, the primary purpose of studies on textbooks is to guide textbook authors and curriculum developers. In addition, teachers' opinions and criticisms regarding mathematics textbooks serve as an important guiding reference. In this context, it is useful to examine studies in which mathematics textbooks are evaluated by teachers.

It is evident that studies on this issue have been conducted over time (Arslan & Özpınar, 2009; Dane, Doğar, & Balkı, 2004; Ercan & Çakar, 2021; Gökçek, 2011; Güder & Tutak, 2012; Korkmaz, Tutak, & İlhan, 2020; Kurtulmuş, 2010; Özcan & Erduran, 2018; Taşdemir, 2011). When the content of these studies is examined, teachers report various deficiencies in mathematics textbooks. It has been found that teachers either do not use textbooks because they consider them inadequate or rely on supplementary instructional materials. Other identified shortcomings include the lack of consideration of students' prior knowledge, insufficient coherence between units, and the predominance of assessment questions at the application level (Arslan & Özpınar, 2009). In addition, studies have indicated that the number of questions is limited and that the questions are not aligned with the examination system (Ercan & Çakar, 2021). Furthermore, deficiencies related to the clarity and organization of subject presentation have also been reported (Özcan & Erduran, 2018). In the international literature, mathematics textbooks are commonly evaluated based on criteria such as alignment with curriculum objectives, the cognitive demand of tasks, and assessment orientation (Fan, Zhu, & Miao, 2013). In addition, studies emphasize the importance of teachers' perspectives in textbook evaluation, as teachers provide critical insights into how textbooks function in real classroom contexts and support instructional practices (Pepin, Gueudet, & Trouche, 2013). Within this framework, teachers' evaluations are considered a critical source of evidence for understanding how effectively textbooks support instructional practices and assessment expectations. More recent studies continue to emphasize the central role of textbooks and teachers' perspectives in curriculum implementation and assessment alignment (e.g., Rezat, Fan, & Pepin, 2021). It is noteworthy that relatively few of these studies focus specifically on secondary school mathematics textbooks. Another effective way to identify deficiencies in secondary school mathematics textbooks is through studies in which teachers evaluate the textbooks. In other words, another situation that can contribute to the opinions of measurement field experts, field educators, and program developers may be teachers' evaluations of textbooks. As a matter of fact, in a meta-analysis study conducted on textbooks, it was found that the most studies were conducted on teacher opinions until 2018 (Şahin & Başgöl, 2019). However, there have been few studies conducted after 2018. In this context, it would be useful to conduct further studies to prevent the same deficiencies in writing textbooks suitable for the new curriculum. Especially in the last five years, the fact that little has been conducted for the evaluation of secondary school textbooks in Türkiye increases the necessity of the current study.



Problem of the Study

We live in a globalizing world in which information spreads rapidly. In this world, technology has become indispensable, and the concept of distance has largely lost its significance. Educating individuals who can adapt to contemporary developments, read, research, reason, and produce, and possess self-control and self-confidence is only possible through effective education. The responsibility for transferring global developments and changes into education systems primarily lies with national education curricula. In this context, revising curricula in line with the demands and developments of the age plays a critically important role. As in many countries, curriculum revision processes in Türkiye are conducted carefully and systematically. According to Demirel (2007a), curriculum development is defined as “a process that involves a two-way interaction in the development of curriculum elements, including objectives, content, teaching–learning processes, and measurement and evaluation.” In Türkiye, studies on curriculum development are designed by the Ministry of National Education and the Board of Education and Discipline. Within this framework, the Board revised the curriculum in 2005, 2009, 2013, and 2018. Finally, the Türkiye Century Education Model Curriculum was adopted in 2024. It was initially announced that the curriculum would be implemented gradually, beginning with the 5th and 9th grades. One of the main reasons for this gradual implementation is that the preparation of mathematics textbooks, which directly reflect mathematics curricula, requires careful and meticulous planning. Preparing mathematics textbooks aligned with the 2024 Maarif Model Curriculum is a process that demands both time and substantial effort. Another factor that can contribute to the development of accurate and effective mathematics textbooks is the identification of deficiencies and needs in the textbooks currently used in mathematics education and the use of these findings as guiding references in the preparation of new textbooks. Identifying problems in existing mathematics textbooks plays a crucial role in the development of new textbooks following curriculum revisions. A review of the literature indicates that very few studies conducted over the past five years have examined mathematics textbooks in detail from teachers’ perspectives. As a result, existing deficiencies may remain unaddressed. In this regard, the failure to identify current deficiencies and errors emerges as a significant problem, which may lead to the preparation of new textbooks without sufficient awareness of the limitations of existing ones.

Sub-problems of the Study

This study aims to contribute to the effective implementation of the new curriculum by addressing the gap related to the evaluation of mathematics textbooks. Accordingly, the present study examines teachers’ evaluations of Ministry of National Education (MoNE) secondary school mathematics textbooks within the context of these innovations. For this purpose, the study seeks to answer the following research questions:

1. What are mathematics teachers’ opinions regarding the alignment of MoNE secondary school mathematics textbooks with the High School Entrance Exam (LGS)?
2. What are mathematics teachers’ opinions on the active use of MoNE secondary school mathematics textbooks in mathematics lessons?
3. What are mathematics teachers’ opinions regarding the use of supplementary resources in mathematics lessons?
4. What are mathematics teachers’ opinions about the suitability of MoNE mathematics textbooks for the curriculum?



5. What suggestions do mathematics teachers offer for the improvement of MoNE secondary school mathematics textbooks?

For all the research questions presented above, teachers' responses on various topics, including new-generation (skill-based) questions, are discussed in the findings section using direct quotations and data tables.

Methodology

In the research, the case study method, one of the qualitative research designs, was used. A case study is expressed as an in-depth investigation and description of a limited number of systems, phenomena, people, events, etc. (Creswell, 2013; Merriam, 2013). The situation examined in the current study is the evaluations of mathematics teachers regarding secondary school mathematics textbooks.

Ethics board information

The ethics committee approval for the current study was obtained with the letter dated 06.12.2023 and numbered 120082.

Participants

The study was conducted with nineteen mathematics teachers working in public secondary schools in a city located in the Central Anatolia region. The participants were selected using convenience sampling. Detailed information about the participants is presented in Table 1.

Tablo 1. Information about participants of the research

Teachers	Category	Frequency
Gender	Female	7
	Male	12
Year of Service	6-10	7
	11-15	6
	16-20	5
	21-25	1
Number of schools from which data were collected and their socioeconomic status.	Middle status scholl	3
	Good status scholl	7
The department he/she graduated	All of the teachers are graduates of the mathematics teaching programs of the faculty of education, which were updated with a student-centered approach in Türkiye in the 2000s.	
The level of the class he/she taught	All of the teachers have experience teaching mathematics at all secondary schoolgrade levels (5, 6, 7 and 8).	

Data Collection Tool and Process

The research data were collected using an open-ended opinion form developed with input from two experts holding doctoral degrees in mathematics education. The form consisted of five questions addressing issues such as teachers' active use of textbooks and the



alignment of textbooks with the High School Entrance Exam (LGS), which includes new-generation (skill-based) questions. In the development of the open-ended opinion form, the relevant literature was first carefully reviewed. Subsequently, a draft form consisting of six questions was prepared. Based on expert feedback, one question was removed, and the remaining questions were revised linguistically in line with the experts' suggestions. The revised form was then administered to five mathematics teachers as part of a pilot study. Issues related to the clarity and comprehensibility of the questions were identified by considering teachers' written responses and the questions they raised during this process. Following the pilot study, the experts were asked to re-evaluate the form in terms of content and scope and to rate each question as appropriate (3), partially appropriate (2), or not appropriate (1). Based on these ratings, the Kappa coefficient for the reliability of the form was calculated to be above 0.90, indicating a high level of reliability. Accordingly, the validity and reliability of the data collection tool were ensured. During the data collection process, participants were informed in detail about the purpose of the study, and it was stated that their identities would not be disclosed or shared for purposes other than research. In the presentation of the findings, participants were assigned codes such as female teacher (K1) and male teacher (E1) instead of their real names, and these codes were used throughout the study.

Analysis of Data

The data were analyzed using content analysis. Content analysis refers to the process of generating categories to identify the main thematic areas underlying the data and the specific subcategories within these areas (Tavşancıl & Aslan, 2001). In this study, teachers' responses to the five questions in the open-ended opinion form were analyzed to allow for an in-depth examination. Following the presentation of the data for each question in tables, direct quotations reflecting teachers' views were provided.

Reliability of the Study

A review of the literature indicates that researchers commonly employ strategies such as direct quotations, references to relevant literature, coding reliability, or data analysis frameworks to ensure validity and reliability. In the present study, direct quotations from teachers' opinions were also used as the basis for each generated code. In fact, previous studies evaluating textbooks based on teachers' opinions have shown that the use of direct quotations is the most frequently employed method to support validity and reliability (Şahin & Başgöl, 2019). In this study, categories and codes related to each content area were first developed by the researchers based on teachers' responses. All categories and codes are presented in the tables. Subsequently, two independent researchers coded the responses to each question in the open-ended opinion form, whose validity and reliability had been established. There were very few inconsistencies between the codings of the two researchers. The resulting frequencies are presented in the tables, and direct quotations are provided for each category and code.

Findings

This section presents the findings related to the evaluation of secondary school mathematics textbooks based on teachers' opinions. Specifically, the findings address the suitability of textbooks for the High School Entrance Exam (LGS), their active use in the teaching process, their alignment with the curriculum implemented in schools, and the need for supplementary textbooks in instructional activities.



First, secondary school mathematics teachers were asked about the alignment of mathematics textbooks with the LGS. The findings derived from teachers' responses to this question are presented in Table 2.

Table 2. Alignment of secondary school mathematics textbooks with LGS

Subject Content	Category	Code	Frequency	%
Alignment of textbooks with LGS	Positive	Partially Appropriate	3	15.78
		Total	3	15.78
	Negative	Incompatible with new-generation (skill-based) questions	13	68.42
		Content Problematic	2	10.52
		Poor Understandability	1	5.26
		Total	16	84.20

When Table 2 is examined, it is seen that the alignment of mathematics textbooks with the LGS is evaluated under two main categories: positive and negative. An examination of these categories indicates that the negative category has a considerably higher proportion (84.20%). Within the positive category, 15.78% ($f = 3$) of mathematics teachers evaluated the textbooks as partially appropriate and emphasized aspects that require improvement. Within the negative category, approximately 68.42% ($f = 13$) of the mathematics teachers stated that the textbooks were not aligned with the level of the LGS questions, particularly due to their incompatibility with new-generation (skill-based) questions. In addition, 10.52% ($f = 2$) of the teachers evaluated the content as problematic, while 5.26% ($f = 1$) reported poor understandability. Sample quotations reflecting teachers' views are presented in Figure 1.

Original Quote in Turkish	English Translation
Uygun değil, içerisindeki sorular yeni nesil değil, daha çok kazanım düzeyinde sorular.	Not appropriate. The questions in the textbook are not new-generation (skill-based) questions; rather, they are mostly limited to attainment-level questions.
Uygun değil, yeni nesil soru yok. Sadece kazanım içeriği var.	Not appropriate. The textbook does not include new-generation (skill-based) questions and focuses solely on attainment-based content.
Ders kitapları uygun değil. Kitap anlatması zor örnek ve düzeylerden oluşmaktadır.	The textbooks are not appropriate, as they consist of examples and activities that are difficult for students to understand.

Figure 1. Statements made by E5, K1 and K2



Secondly, secondary school mathematics teachers were asked whether mathematics textbooks should be actively used in lessons. The findings derived from teachers' responses to this question are presented in Table 3.

Table 3. Active use of secondary school mathematics textbooks in the lesson

Subject Content	Category	Code	Frequency	%
Active Use of the Textbook	Positive	Subject Narration	8	22.2
		Homework/Exercise/Question etc.	11	30.5
	Total		19	52.7
	Negative	Subject Narration	9	25
		Homework/Exercise/Question etc.	8	22.2
	Total		17	47.2

*Teachers who provide both codes in each category are included in the frequency of the two codes.

When Table 3 is examined, it is observed that the active use of secondary school mathematics textbooks is evaluated under two main categories: positive and negative. The table indicates a total of 36 evaluation frequencies based on teachers' responses. Within the positive category, approximately 22% ($f = 8$) of mathematics teachers reported actively using textbooks during lessons, whereas within the negative category, 25% ($f = 9$) stated that they did not use textbooks during instruction. In addition, textbooks were most frequently used for homework, questions, and exercises (30.56%). The fact that the total number of evaluation frequencies ($f = 36$) exceeds the number of participating teachers indicates that some teachers provided responses corresponding to both the positive and negative categories (e.g., E10, K6). Sample quotations reflecting teachers' views are presented in Figure 2.

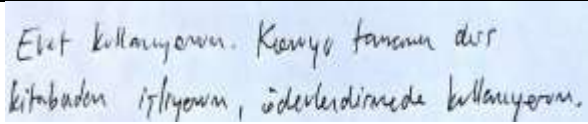
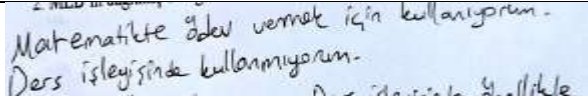
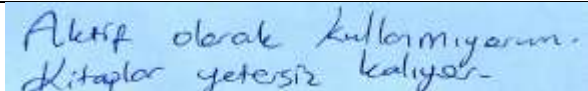
Original Quote in Turkish	English Translation
	Yes, I use the textbook. I cover the topics entirely using the textbook and also use it for assigning homework.
	I use the textbook to assign homework in mathematics, but I do not use it during classroom instruction.
	I do not use the textbook actively, as the books are insufficient.

Figure 2. Statement made by E10, K6 and K2

Thirdly, secondary school mathematics teachers were asked whether they needed supplementary textbooks in addition to MoNE textbooks. The findings derived from teachers' responses to this question are presented in Table 4.



Table 4. The need for supplementary textbooks in addition to MoNE textbooks

Subject Content	Category	Code	Frequency	%
Need for supplementary textbooks	Need Status	Subject Narration	3	12.5
		Lack of new-generation (skill-based) questions/ Incompatibility of the question level	19	79.01
		Understandability	2	8.33
		Total	24	100

*The teachers who provide each code are included in the frequency of the corresponding code.

Table 4 shows that teachers' views on the need for supplementary textbooks are grouped under a single category. Within this category, approximately 79% (f = 19) of mathematics teachers stated that they needed additional exercises and questions due to the lack of new-generation (skill-based) questions or the incompatibility of the question level. In addition, 12.5% (f = 3) of the teachers reported a need for supplementary textbooks in terms of subject narration. Furthermore, 8% (f = 2) of mathematics teachers indicated that the textbooks had low comprehensibility and that they therefore needed supplementary textbooks. Sample quotations reflecting teachers' views are presented in Figure 3.

Original Quote in Turkish	English Translation
	I definitely need supplementary textbooks due to the lack of new-generation (skill-based) questions and the insufficient number of questions.
	I definitely need supplementary textbooks, as the textbooks distributed by the Ministry of National Education (MoNE) do not include enough examples or explanations to adequately cover the topics during instruction.
	Some supplementary textbooks are extremely simple, while others are far above students' levels. Overall, the number of questions provided in these resources is insufficient.
	I need supplementary textbooks, especially because students aiming for success in the LGS require a large number of questions at various difficulty levels.

Figure 3. Statements made by E8, K5, K7, E1

Fourthly, secondary school mathematics teachers were asked whether MoNE mathematics textbooks were suitable for the curriculum. The findings derived from teachers' responses to this question are presented in Table 5.



Table 5.Alignment of mathematics textbooks with the curriculum

Subject Content	Category	Code	Frequency	%
Alignment of textbooks with the curriculum	Positive	Appropriate	15	79
		Partially Appropriate	3	16
		Total	18	95
	Negative	Subject Narration	1	5
		Total	19	100

Table 5 shows that teachers' views on the alignment of mathematics textbooks with the curriculum are grouped into two categories: positive and negative. Within the positive category, approximately 79% ($f = 15$) of mathematics teachers found the textbooks suitable for the curriculum, while a smaller number of teachers ($f = 3$) evaluated them as appropriate but insufficient in terms of exam preparation. Within the negative category, only one mathematics teacher (K2) stated that the textbooks were not suitable for the curriculum due to inadequate subject narration. Sample quotations reflecting teachers' views are presented in Figure 4.

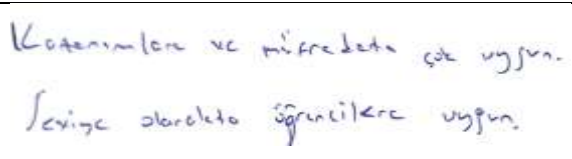
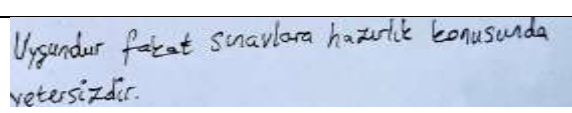
Original Quote in Turkish	English Translation
	It is highly aligned with the attainment-based objectives and the curriculum, and it is appropriate for students' level.
	It is suitable; however, it is insufficient in terms of exam preparation.
	It is suitable.

Figure 4. Statements made by E10, K2, K5

Finally, secondary school mathematics teachers were asked to share their views and suggestions for improving mathematics textbooks. The findings derived from teachers' responses to this question are presented in Table 6.

Table 6.Teachers' views and suggestions for textbook development

Subject Content	Category	Code	Frequency	%
Textbooks Developing	Technical and content-related aspects	Exercise/Next Generation(skill-based) Questions	14	53.85
		Subject Narration	4	15.38
		LGS examalignment	8	30.77
	Total		26	100



* Teachers providing more than one code are included in the frequency of the relevant code.

Table 6 shows that three codes emerged under the category of technical and content-related aspects of textbook development. Within this category, approximately 54% ($f = 14$) of mathematics teachers stated that textbooks should be improved in terms of exercises and new-generation (skill-based) questions, and that the number of questions and examples should be increased. In addition, 15% ($f = 4$) of the teachers emphasized the need for improvement in subject narration, while 31% ($f = 8$) suggested increasing the number of questions aligned with the LGS. Overall, 85% of the teachers indicated that textbooks should include a greater number of questions and more new-generation (skill-based) questions. Sample quotations reflecting teachers' views are presented in Figure 5.

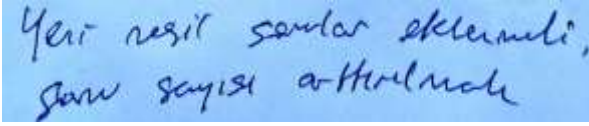
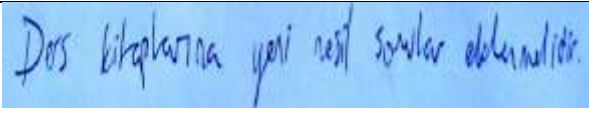
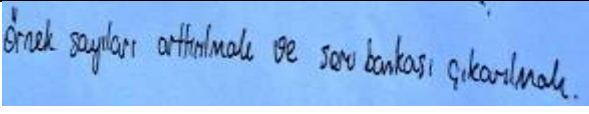
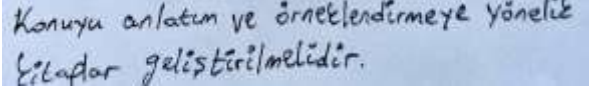
Original Quote in Turkish	English Translation
	New-generation (skill-based) questions should be added, and the number of questions should be increased.
	New-generation (skill-based) questions should be added to the textbooks.
	New-generation (skill-based) questions should be added to the textbooks.
	Textbooks should be developed to provide clearer explanations and richer examples.

Figure 5. Statements made by E3, K3, E4, K5

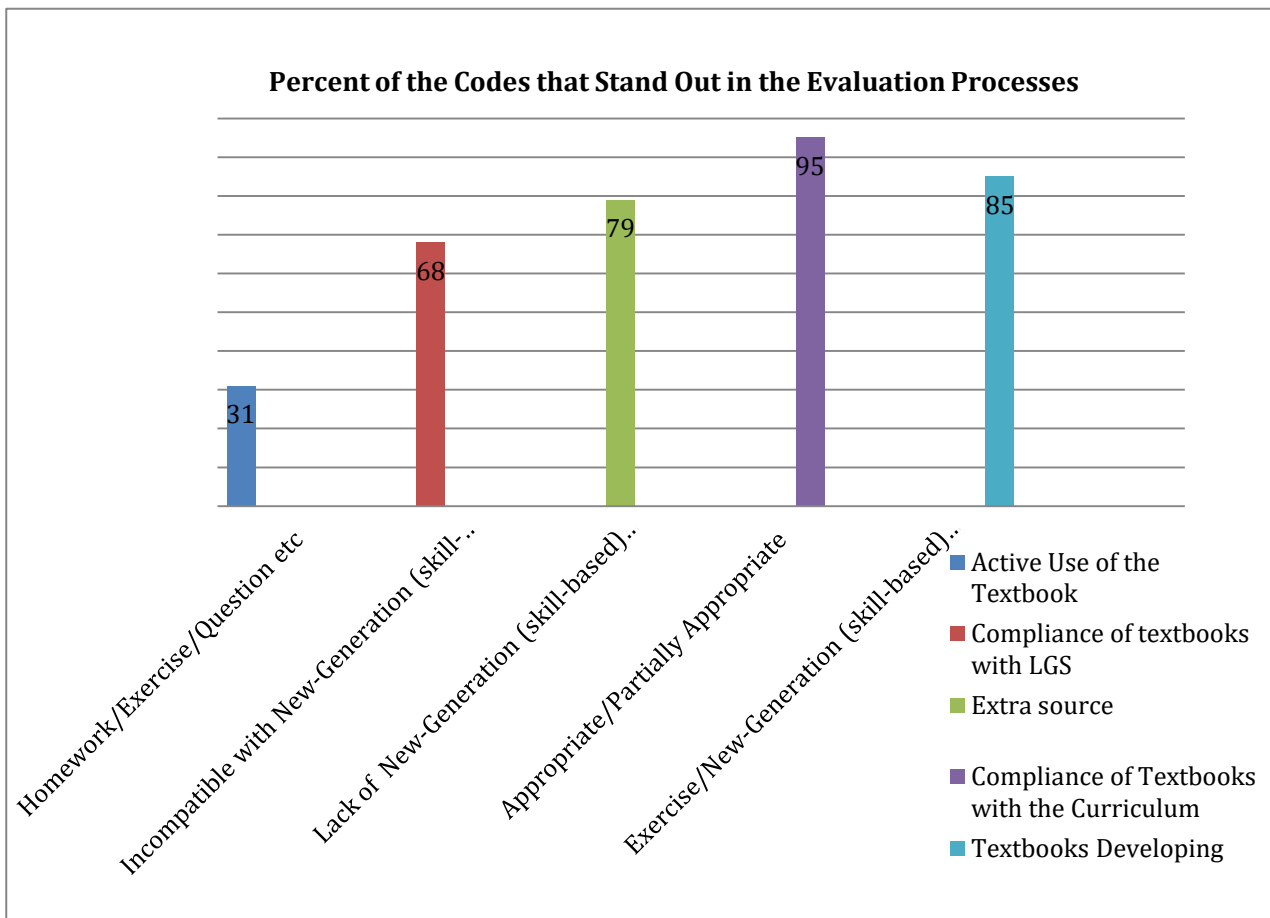


Figure 6. Percentages of the codes identified in the evaluation processes of mathematics textbooks

When Figure 6 is examined, the percentages of the codes identified under the “Subject Content” categories during the evaluation of mathematics textbooks are presented. Figure 6 includes only the codes with the highest frequencies for each subject content. Regarding the subject content “Alignment of textbooks with LGS,” 68% of the teachers evaluated the textbooks as incompatible with new-generation (skill-based) questions, indicating that textbooks are largely considered inadequate in relation to this type of question. For the subject content “Active use of the textbook,” the findings show that teachers primarily use textbooks for exercises and question solving rather than for subject narration (31%). In addition, a high proportion of teachers (79%) reported using supplementary textbooks, stating that mathematics textbooks were insufficient, particularly in terms of new-generation (skill-based) questions. Furthermore, almost all teachers (95%) indicated that mathematics textbooks were aligned with the curriculum. Finally, a large majority of teachers (85%) emphasized that textbooks should be improved by increasing the number of questions and by including more new-generation (skill-based) questions aligned with the LGS.



Results and Discussion

The aim of the present study is to determine secondary school mathematics teachers' opinions regarding current secondary school mathematics textbooks during the implementation process of the Türkiye Century Education Model Curriculum. Taking mathematics teachers' criticisms into account in the preparation of new secondary school mathematics textbooks aligned with the revised curriculum is expected to contribute to the development of more effective instructional materials. In this study, teachers' opinions were obtained through five different open-ended questions. Considering the analysis of teachers' responses to each question, several noteworthy findings emerged.

First, 84% of the mathematics teachers reported that MoNE mathematics textbooks were not aligned with the LGS. Similarly, Erden (2020) found that teachers perceived mathematics textbooks as incompatible with new-generation (skill-based) questions (31%) and reported a lack of questions suitable for this question type (25%). In the present study, only three teachers evaluated the textbooks as partially appropriate. This finding suggests that high-stakes examination requirements such as the LGS may play an important role in shaping teachers' evaluations of textbook adequacy. Teachers also pointed out aspects of textbooks that need improvement, expressing views such as "it can be considered appropriate, but the number of questions should be increased." Similarly, previous studies have reported that mathematics textbooks were insufficient in terms of the number of questions and examples (Katipoğlu & Katipoğlu, 2016; Korkmaz et al., 2020). In the present study, teachers who evaluated the textbooks as incompatible emphasized that the question level did not align with the LGS and was inconsistent with new-generation (skill-based) questions, a view shared by 68% of the participants. Consistent with this finding, Korkmaz et al. (2020) reported that a large proportion of teachers (71%) considered textbooks incompatible with the LGS in terms of content, clarity, and question level. These findings suggest that mathematics textbooks may be prepared in ways that do not sufficiently reflect the demands of the national examination system. Therefore, textbook content should avoid relying primarily on easier and more familiar question types and should instead be aligned with the cognitive demands and structure of the national exam.

The majority of the teachers (85%) stated that MoNE mathematics textbooks should be improved in terms of new-generation (skill-based) questions and alignment with the LGS. Similarly, previous studies have reported that teachers do not consider textbooks compatible with new-generation (skill-based) questions and emphasize the need for improvement in this respect (Korkmaz et al., 2020; Tortop et al., 2022). In the present study, teachers suggested adding questions aligned with the LGS and increasing the number of questions and examples in textbooks. Consistent with these findings, Güder and Tutak (2012) reported that teachers did not find the questions in textbooks sufficient to adequately assess the content of a unit. These findings indicate that increasing the quantity and quality of exam-aligned questions is perceived by teachers as a key requirement for improving the effectiveness of mathematics textbooks.

According to the findings of the study, secondary school mathematics textbooks were found to be sufficient in some respects; however, several deficiencies and areas in need of improvement were also identified. Teachers stated that the textbook content is generally



aligned with the curriculum, the sequence of topics is logical, and the learning outcomes are clearly stated.

Nevertheless, some teachers emphasized that the language used in the textbooks is occasionally difficult to understand, certain topics are not explained in sufficient depth, and some questions are either too easy or too difficult. These findings make a significant contribution to the evaluation of secondary school mathematics textbooks and have important implications for textbook authors and publishers. Based on teachers' opinions, it can be suggested that greater attention should be paid to specific criteria when preparing or revising secondary school mathematics textbooks. These include adjusting the variety and difficulty levels of examples and questions in accordance with the LGS, ensuring alignment with national examinations, increasing both the quantity and quality of practice and assessment questions, and presenting subject explanations in a clearer, simpler, and more concise manner. In addition, greater emphasis should be placed on incorporating mathematics teachers' opinions and suggestions in the textbook development and selection processes. From a broader perspective, it may be beneficial for the Ministry of National Education to provide students with one or more supplementary question banks containing new-generation (skill-based) questions, aligned with the current examination system, in addition to the official textbooks. Furthermore, greater attention should be given to organizing textbook content and presentation in accordance with students' interests, needs, and proficiency levels. Finally, to ensure the effective use of textbooks, appropriate support and professional development opportunities should be provided for teachers.

Limitations of the Study and Suggestions for Future Research

The findings of the present study are based on the opinions of the participating teachers. Specifically, the study examined the views of mathematics teachers working in the Central Anatolia region. In addition, the study focused only on mathematics textbooks published by the Ministry of National Education; therefore, textbooks published by private publishing houses were not included.

Future studies may extend these findings by collecting data from teachers working in different regions. In addition, studies involving a larger number of teachers through survey methods may provide more comprehensive results. To ensure data triangulation, different data collection tools may also be employed in future research. Furthermore, by examining teachers' opinions on textbooks published by private publishers, comparative analyses can be conducted. Teachers' views on textbooks may also be explored in greater depth through focus group interviews. Moreover, relatively few studies on mathematics textbooks have examined the alignment between textbooks and the curriculum. Considering the critical role of textbooks in curriculum implementation, further research focusing on textbook–curriculum alignment is recommended. In addition, studies investigating mathematics textbooks have rarely examined the views of prospective teachers. Therefore, future research may focus on exploring prospective teachers' opinions regarding mathematics textbooks.

Overall, these findings highlight the importance of aligning mathematics textbooks with both curriculum requirements and the expectations of high-stakes assessment systems.



REFERENCES

- Altun, M. (2011). Eğitim fakülteleri ve lise matematik öğretmenleri için matematik öğretimi. *Aktüel Alfa*.
- Arslan, S., & Özpınar, İ. (2009). Evaluation of 6th Grade Mathematics Textbooks Along With the Teacher Opinions. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, 12, 97–113. <https://dergipark.org.tr/en/download/article-file/787134>.
- Atasoy, Ö. G. D. (2019). A study on how logical reasoning questions can be solved more easily. In C. Polat & Z. Alimgerey (Eds.), *6th International Congress of Vocational and Technical Sciences* (pp. 416–432).
- Bulut, F., Ceylan, D., & Ceylan, B. (2022). Investigation of the assessment and evaluation methods used in primary school in accordance with teachers' opinions. *Black Sea Journal of Public and Social Science*, 5(2), 1-8. <https://doi.org/10.52704/bssocialscience.1032984>
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage.
- Dane, A., Doğar, Ç., & Balkı, N. (2004). The evaluation of the primary education seventh grade mathematics textbooks. *Erzincan University Journal of Education Faculty*, 6(2), 1-18. <https://dergipark.org.tr/en/download/article-file/67141>
- Demirel, Ö. (2007a). *Eğitimde program geliştirme*. Pegem Akademi.
- Dolapçıoğlu, S. (2020). Effect of materials for thinking classroom (MTC) on PISA reading literacy. *Journal of Mother Tongue Education*, 8(1), 196-210. <https://hdl.handle.net/20.500.12483/3336>.
- Ercan, S., & Çakar, B. (2021). Examination of mathematics lesson curriculum and textbooks according to teacher and student opinions. *Journal of Education Science and Research*, 2(2), 86-107. <https://dergipark.org.tr/en/download/article-file/1783920>.
- Erden, B. (2020). Teachers' views related to skill-based questions in Turkish, mathematics and science lessons. *Academia Journal of Educational Research*, 5(2), 270-292. <https://dergipark.org.tr/tr/pub/egitim/archive>
- Fan, L., Zhu, Y., & Miao, Z. (2013). Textbook research in mathematics education: Development status and directions. *ZDM–Mathematics Education*, 45(5), 633–646. <https://link.springer.com/article/10.1007/s11858-013-0539-x>
- Feriyanto, F., & Putri, R. O. E. (2020). Developing mathematics module based on literacy and higher order thinking skills (HOTS) questions to train critical thinking ability of high school students in Mojokerto. *Journal of Physics: Conference Series*, 1594(1), 012014. <https://doi.org/10.1088/1742-6596/1594/1/012014>



- Firdaus, F., Kailani, I., Bakar, M. N. B., & Bakry, B. (2015). Developing critical thinking skills of students in mathematics learning. *Journal of Education and Learning*, 9(3), 226-236.
- García, T., Boom, J., Kroesbergen, E. H., Núñez, J. C., & Rodríguez, C. (2019). Planning, execution, and revision in mathematics problem solving: Does the order of the phases matter? *Studies in Educational Evaluation*, 61, 83-93. <https://doi.org/10.1016/j.stueduc.2019.03.001>
- Gökçek, T. (2011). 6. sınıf matematik ders kitaplarının öğretmen perspektifiyle değerlendirilmesi. *Milli Eğitim Dergisi*, 41(190), 293-308. <https://dergipark.org.tr/en/download/article-file/442570>
- Güder, Y., & Tutak, T. (2012). The opinions of the primary 5th grade school teachers' views about mathematics textbook. *Dicle University Journal of Ziya Gökalp Faculty of Education*, (19), 16–28. <https://www.ajindex.com/dosyalar/makale/acarindex-1423939748>
- Katipoğlu, M., & Katipoğlu, S. N. (2016). Mathematics teachers' opinions about student coursebook. *International Journal of Education Science and Technology*, 2(3), 156-165. <https://dergipark.org.tr/en/download/article-file/263143>
- Korkmaz, E., Tutak, T., & İlhan, A. (2020). Evaluation of middle school mathematics textbooks by mathematics teachers. *The European Journal of Science and Technology*, (18), 118–128. <https://doi.org/10.31590/ejosat.667689>
- Kurniati, D., & As'ari, A. R. (2019). The truth-seeking and open-mindedness of pre-service mathematics teachers in the solution of non-routine problems. *International Journal of Instruction*, 12(1), 915–930. <https://files.eric.ed.gov/fulltext/EJ1201380.pdf>
- Kurtulmuş, Y. (2010). Teachers' opinions about primary school 8th grade coursebook [Master's thesis, Hatay Mustafa Kemal University]. <https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp>
- Lee, K. S. (1982). Fourth graders' heuristic problem-solving behavior. *Journal for Research in Mathematics Education*, 13(2), 110-123. <https://doi.org/10.5951/jresmetheduc.13.2.0110>
- Lee, N. H., Yeo, D. J. S., & Hong, S. E. (2014). A metacognitive-based instruction for primary four students to approach non-routine mathematical word problems. *ZDM–Mathematics Education*, 46(3), 465-480. <https://doi.org/10.1007/s11858-014-0599-6>
- Merriam, S. B. (2013). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Ministry of National Education [MoNE]. (2018). *Elementary school mathematics curriculum (Grades 5–8)*. Board of Education.
- Özcan, Ö., & Erduran, A. (2018). Investigation of high school mathematics textbooks according to teachers' views: The 10th class sample. *IBAD Journal of Social Sciences*, 3(2), 933–959. <https://doi.org/10.21733/ibad.475459>



Öztürk, E., & Coşkun, Y. D. (2022). Comparison of middle school mathematics curricula in Türkiye and Canada. *Anadolu University Journal of Education Faculty*, 6(2), 188-202. <https://doi.org/10.34056/aujef.1014046>.

Pepin, B., Gueudet, G., & Trouche, L. (2013). Investigating textbooks as crucial interfaces between culture, policy and teacher curricular practice: Two contrasted case studies in France and Norway. *ZDM–Mathematics Education*, 45(5), 685–698. <https://doi.org/10.1007/s11858-013-0526-2>

Rezat, S., Fan, L., & Pepin, B. (2021). Mathematics textbooks and curriculum resources as instruments for change. *ZDM–Mathematics Education*, 53(8), 1189–1206. <https://doi.org/10.1007/s11858-021-01309-3>

Santos-Trigo, M., & Camacho-Machín, M. (2009). Towards the construction of a framework to deal with routine problems to foster mathematical inquiry. *Primus*, 19(3), 260–279. <https://doi.org/10.1080/10511970701641990>

Stanic, G., & Kilpatrick, J. (1989). Historical perspectives on problem solving in the mathematics curriculum. In R. Charles & E. Silver (Eds.), *The teaching and assessing of mathematical problem solving* (pp. 1–22). National Council of Teachers of Mathematics.

Şahin, Ö., & Başgöl, M. (2019). Mathematics textbooks research trends in Türkiye. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 13(1), 328–358. <https://doi.org/10.17522/balikesirnef.508802>

Taşdemir, C. (2011). Evaluating of mathematics lesson books taught in first grade of elementary school according to the views of teachers. *Dicle University Ziya Gökalp Faculty of Education Journal*, (16), 16–27. <https://dergipark.org.tr/en/download/article-file/787050>

Tatar, E., & Dikici, R. (2008). Learning difficulties in mathematics education. *Mustafa Kemal University Social Sciences Institute Journal*, 9(5), 183–193. <https://dergipark.org.tr/en/pub/mkusbed/issue/19561/208536>

Tavşancıl, E., & Aslan, A. E. (2001). *Content analysis and application examples for verbal, written and other materials*. İstanbul: Epsilon Publications.

Tortop, F., Cumalı, A., Çelenli, M., & Taşpınar-Şener, Z. (2022). Teacher opinions on skill-based mathematics questions in the LGS exam. *Erciyes Journal of Education*, 6(2), 99–126. <https://doi.org/10.32433/eje.1076448>