

Comparison of Assessment and Evaluation Elements of 2018 and 2024 High School Mathematics Curriculums

Nur Sirmaci

Atatürk University Kazım Karabekir Faculty of Education

Abstract: *The aim of the study was to compare the assessment and evaluation elements of the 2018 and 2024 High school Mathematics Curriculums. In this study, the document review method in the qualitative research design was used. The data of this study consists of 2018 and 2024 High school Mathematics Curriculum. In the research process, documents were first accessed. The originality of the documents was checked and an attempt was made to understand the documents. Then, data analysis was started. In the data analysis, while comparing the assessment and evaluation in the curriculums, the unit of analysis was determined in accordance with the purpose of the research. In the study, sentences and paragraphs in the curriculum were used as the unit of analysis. As a result of the analysis, necessary information was provided on assessment and evaluation in both curriculums. However, in the 2024 High School Mathematic Curriculum, assessment and evaluation types were determined for each subject and presented to the service of practitioners.*

Keywords: High school Curriculum, Curriculum elements, Assessment and evaluation

1. INTRODUCTION

The word curriculum, derived from the Latin for racecourse, was first introduced in the University of Glasgow in the seventeenth century to indicate a formal course of study that the students completed (Harden, 2001).

Curriculums are teaching guides applied by teachers to students.

Curriculum is defined as the sum of all experiences, which are to be provided in an educational institution (Bharvad, 2010). Curriculum is the overall plan or design for a course (Richards, 2013).

Curriculums are the product of the curriculum development process. Curriculum development is a planned, purposeful process to create positive improvements in the education system (Mohanasundaram, 2018). Therefore, in the 2018 high school mathematics curriculum, mathematical competence is the development and application of mathematical thinking to solve a series of problems encountered in

daily life. The process, activity and knowledge built on a solid arithmetic skill are emphasized. Mathematical competence includes the ability and desire to use mathematical modes of thinking (logical and spatial thinking) and presentation (formulas, models, plots, graphs and tables) to different degrees (Ministry of National Education of Republic of Turkey, 2018). The five field skills based on conceptual skills and mathematical field skills in the content design of the 2024 high school mathematics curriculum are as follows.

- Mathematical reasoning,
- Mathematical problem solving,
- Mathematical representation,
- Working with data and data-based decision making,
- Working with mathematical tools and technology

(Ministry of National Education of Republic of Türkiye, 2024).

Curriculums should be prepared and updated in parallel with the developments in the world. Evaluation of educational curriculums is necessary and even mandatory for the development of curriculums (Orbeyi & Güven, 2008). Comparison of all elements of the created curriculums is also necessary for the development of curriculums. Like all elements of the curriculum, Assessment and Evaluation are of great importance. Assessment and Evaluation are very important tools that reveal the student's learning of the subject from every perspective and his/her perspective on the subject. Therefore, in this study, the Assessment and Evaluation element of the 2018 and 2024 high school mathematics curriculum will be compared.

2. METHODOLOGY

2.1. Model of the Research

In this study, qualitative research design and document review method was used.

Document analysis is a scientific research method that can be defined as the collection, review, questioning and analysis of various documents as the primary source of research data. While this method mostly serves as a complement to other research methods in the literature, it is also used as a stand-alone method (Sak & Şahin Sak, 2021).

2.2. Research Process

2.2.1. Document Collection :

The data of this study consists of the the Assessment and Evaluation in the 2018 High school School Mathematics(9., 10., 11. and 12. Grades) and 2024 High school School Mathematics Curriculum(9., 10., 11. and 12. Grades) The research data were taken from <https://mufredat.meb.gov.tr> and <https://tymm.meb.gov.tr>.

2.2.2. Verifying Document Originality: Both curriculum examined are official curriculum used in Turkey.

2.2.3. Document Understanding:

The assessment and evaluation statements in both high school mathematics curriculum were read and interpreted comparatively.

2.2.4. Data Analysis:

The categories titled assessment and evaluation were created for the 2018 and 2024 high school school mathematics curriculum. After the categories were created, the unit of analysis was determined depending on the purpose of the study. In the study, sentences and paragraphs included in assessment and evaluation were used as the unit of analysis. Finally, findings and results based on the evaluation of the assessment and evaluation elements in both curriculums in terms of similarities and differences were presented.

In the assessment and evaluation section of the 2018 High school school (9., 10., 11. and 12. Grades) mathematics curriculum, there is no assessment and evaluation section for each subject. However, in the assessment and evaluation section of the 2024 High school school (9., 10., 11. and 12. Grades) mathematics curriculum, there is a assessment and evaluation section for each subject. For this reason, the assessment and evaluation section of one of the subjects was selected and included in the analysis. The subject selected for analysis is the subject “ THEME 2: (10. Grade). Quantities and Changes about the subject is provided below.

THEME 2: QUANTITIES AND CHANGES

In this theme, it is aimed for students to evaluate the conditions of being a function in real numbers and the qualitative properties of functions with mathematical representations; to reason about functions derived from square, square root and

rational reference functions and the qualitative properties of these functions; to make inferences about linear, square, square root and rational reference functions and the inverse functions of functions that can be derived from these functions; to solve real-life problems that include equations and inequalities that can be expressed with these functions.

4.FINDINGS

Table 1

Assessment and Evaluation in The 2018 High School Mathematics Curriculums

No person is exactly the same as another. For this reason, it is against human nature for curriculums and the related Assessment and Evaluation process to be “suitable for everyone”, “valid and standard for everyone”. For this reason, it is essential to act with the maximum understanding of diversity and flexibility in the Assessment and Evaluation process. Curriculums are a guide in this respect. Expecting curriculums to include all elements related to Assessment and Evaluation cannot be considered as a realistic expectation. Since diversity in education is seriously affected by internal and external dynamics such as the individual, education level, course content, social environment, school facilities, etc., the priority in ensuring the effectiveness of Assessment and Evaluation practices is expected from teachers and educational practitioners, not curriculums. At this point, originality and creativity are the basic expectations from teachers. From this perspective, it is possible to summarize the principles that guide Assessment and Evaluation practices in curriculum as follows:

Assessment and Evaluation studies should provide maximum harmony with all components of the curriculum, and the limits of achievements and explanations should be taken as basis.

The curriculum does not draw definite boundaries for implementers in terms of measurement tools and methods that can be used in the measurement process, it only guides them. However, the required technical and academic standards should be followed in the preferred Assessment and Evaluation tool and method.

Assessment and Evaluation practices in education are an inseparable part of education and are carried out throughout the education process. Measurement results are not considered alone, but in an integrated manner together with the processes followed.

Due to the reality of individual differences, it is not appropriate to talk about a universal, uniform Assessment and Evaluation method that covers all students. A student's academic development is not measured and evaluated with a single method or technique. Education is given not only for "knowing (thought)" but also for "feeling (emotion)" and "doing (action)"; therefore, cognitive measurements alone cannot be considered sufficient.

Multi-focused Assessment and Evaluation is essential. Assessment and Evaluation practices are carried out with the active participation of teachers and students. Individuals' characteristics such as interest, attitude, value and success, which are the subjects of Assessment and Evaluation, may change over time. For this reason, it is essential to use measurements that take into account changes in the process rather than measuring these characteristics at a single time.

Table 2

Assessment and Evaluation in The 2024 High school School Mathematics Curriculums

In the Secondary School Mathematics Curriculum, a Assessment and Evaluation approach has been adopted that will support students' learning and provide systematic feedback to students. In this approach, in addition to monitoring and evaluating the development of students' knowledge and skills, observing the development of their tendencies towards mathematics, social-emotional learning skills, literacy skills and values is also important in terms of the holistic approach of the curriculum. In the Secondary School Mathematics Curriculum, it is aimed to provide feedback to students about their knowledge levels, deficiencies or misconceptions by using supplementary measurement tools. The measurement tools used in this process should be preferred in a way that will contribute to the learning-teaching process in the different dimensions mentioned above, based on the principle of feedback.

In this section of the curriculum, activities that include process and outcome evaluations for learning outcomes and aim to measure the skills emphasized in the learning outcome with a holistic approach and the evaluation of these activities are included. Intermediate evaluation activities for the process implemented on the way to reaching the learning outcome are included in the learning-teaching practices. All Assessment and Evaluation tools recommended for Assessment and Evaluation activities are listed in the "learning evidence" section. The content, preparation and implementation of these tools will be shaped by the stakeholders.

2.THEME (10. Grade): Assessment and Evaluation on Quantities And Changes

Learning outcomes can be assessed through worksheets, concept maps, mind maps, performance tasks, projects and research assignments.

Students can be given a worksheet that will enable them to evaluate the conditions of being a function of real numbers and the qualitative properties of functions defined on real numbers with mathematical representations.

An analytical graded scoring key can be prepared to evaluate the performance task, which

includes examining the qualitative properties of quadratic, square root and rational reference functions and the changes in the algebraic representation of the function caused by the transformations applied to the graphs of these reference functions.

Project assignments that require the use of qualitative properties of quadratic functions on problems encountered in real-life situations related to economics, physics or chemistry can be evaluated with an analytical scoring key.

A research assignment given to examine the relationship between functions derived from the rational reference function and inverse proportion in real-life situations can be evaluated using a rating scale that includes preparation, content and presentation processes.

A worksheet requiring mathematical verification and proof can be given for functions derived from the rational reference function and propositions regarding the qualitative properties of these functions. The data presented can be evaluated with an analytical graded scoring key. At the end of the study, students can evaluate their own performance with a self-assessment form.

The worksheet given on the relations between the graphical or algebraic representation of functions derived from quadratic, square root and rational reference functions and the graphical or algebraic representation of the inverse function of these functions can be evaluated with an analytical graded scoring key. The performance task regarding the use of mathematical tools and technology given in this subject can be evaluated with a grading scale that includes the content and presentation processes. A project assignment that includes real-life problems using equations and inequalities obtained from linear, quadratic, square root and rational reference functions and functions derived from these functions, and that will contribute to the development of students' mathematical modeling skills can be given. A grading scale that includes the preparation, content and presentation processes can be used in the evaluation of the assignment.

CONCLUSION

The principles regarding the implementation of the 2024 High School Mathematics Course Curriculum include monitoring and evaluating the level of mathematical knowledge and skills. In addition, it is emphasized that the development of their tendencies towards mathematics, social-emotional learning skills, literacy skills and values should be observed. Here, it is emphasized that the student cannot be evaluated only in terms of academic success. It is emphasized that Assessment and Evaluation tools should be used to reveal the knowledge levels, deficiencies or misconceptions of the students. In addition, it is emphasized that Assessment and Evaluation activities should be included to determine whether the learning outcomes have been achieved and the importance of evaluating these activities.

Assessment and Evaluation prepared according to the above-mentioned issues for each subject in the curriculum are presented. The 2018 curriculum is based on the Assessment and Evaluation principles taken as basis in the 2024 curriculum. However, no Assessment and Evaluation information is provided for each subject in the 2018 curriculum. When evaluated from these perspectives, the Assessment and Evaluation activities specified in the 2024 curriculum for each subject have guided teachers. In addition, teachers can benefit from the Assessment and Evaluation activities specified in the curriculum and gain the skills to use alternative Assessment and Evaluation activities in their lessons. In this respect, it can be said that the 2024 curriculum is literally a guide. Curriculums should always show development (Durukan, 2013). In this sense, we can say that the 2024 curriculum has been developed in a positive way.

REFERENCES

- A. J. Bharvad, "Curriculum Evaluation", International Research Journal, Vol.1, No12, pp. 72-74, 2010.
- E., Durukan, "Teachers' Views About Acquisitions in Turkish Lesson Curriculum", Black Sea Journal of Social Sciences, Vol.5, No 8, 2013.
- J., C., Richards, "Curriculum Approaches in Language Teaching: Forward, Central, and Backward Design", RELC Journal, Vol.44, No 1, pp.5-33, 2013.
- K. Mohanasundaram, "Curriculum Design and Development", Journal of Applied and Advanced Research, Vol. 3, No1, pp. 4-6, 2018.
- Ministry of National Education of Republic of Türkiye, "High School Mathematic Curriculum(5., 6.,7. and 8.. Grades)", 2018, <https://mufredat.meb.gov.tr/>
- Ministry of National Education of Republic of Türkiye, "High School Mathematic Curriculum(5., 6.,7. and 8.. Grades)", 2024 <https://mufredat.meb.gov>
- R., Sak & İ. T., Şahin Sak, Öneren Şendil, Ç., & Nas, E.. Document analysis as a research method. Kocaeli University Journal of Education, Vol.4, No1, pp.227-250, 2021.
- R.M. Harden, The learning environment and the curriculum, Medical Teacher, Vol.23, No 4, pp.335-336, 2001.
- S., Orbeyi & B., Güven, "Teachers' Perceptions Related to The Evaluation Component of The Education Curriculum of Primary School Education Mathematics Studies", Journal of Theory and Practice in Education , Vol. 4, No 1, pp.133-147, 2008.