

Comparison of Differentiation of 2018 and 2024 High School Mathematics Curriculums

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Abstract: *The aim of the study was to compare the differentiation 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 Curriculums. In the research process, documents were first accessed. The originality of the documents was checked and an attempt was made to understand the documents. In the data analysis, while comparing the differentiation in the programs, the unit of analysis was determined in accordance with the purpose of the research. In the study, sentences and paragraphs in the curriculums were used as the unit of analysis. As a result of the analysis, information was provided differentiation in both programs. Differentiation is handled quite well in the 2024 High School Curriculum*

Keywords: *High School, Mathematics Curriculum, Differentiation.*

1. INTRODUCTION

Every student is different in every way. Just as people have different physical characteristics, so too do their interests, talents, and abilities. The diversity of students' knowledge, skills, and abilities is the most important factor directly impacting education and training.

Traditionally, teaching has essentially been an effort to transfer knowledge to classrooms where students are considered an undifferentiated, homogeneous community. This is despite the fact that classrooms are always composed of students with diverse abilities, especially in terms of student readiness (Konstantinou-Katzi, Tsolaki, Meletiou-Mavrotheris, & Koutselini, 2012). This learning environment is designed without considering the diverse learning needs of students.

In instruction with differentiation in mind, the teaching process and assessment are designed with students' learning needs at the forefront. Differentiation in education creates engaging and challenging experiences that increase engagement and achievement by tailoring content and assessment to meet the needs of diverse students (Goyibovaa, Muslimov, Sabirovaa, Kadirovaa, & Samatova, 2025). Therefore, as more children from diverse backgrounds fill the profile of today's classrooms, it is imperative that educators plan to meet the needs of all students (Bushie, 2015). Studies have shown that the effective use of differentiation can help increase student motivation, academic achievement, and constructively build upon students' prior knowledge (Taylor, 2017). Curriculum in Turkey has attempted to address this.(Ministry of National Education of Republic of Türkiye, “Primary mathematic Curriculum(1.,2., 3, 4. Grades)” ,2018, Ministry of National Education of Republic of Türkiye, “Middle School Mathematic Curriculum(5., 6.,7. and 8.. Grades)”, 2018 & Ministry of National Education of Republic of Türkiye, “High School Mathematic Curriculum(9., 10.,11. and 12.. Grades)”, 2018); (Ministry of National Education of Republic of Türkiye, “Primary mathematic Curriculum(1.,2., 3, 4. Grades)” ,2024, Ministry of National Education of Republic of Türkiye, “Middle School Mathematic Curriculum(5., 6.,7. and 8.. Grades)”, 2024 & Ministry of National Education of Republic of Türkiye, “High School Mathematic Curriculum(9., 10.,11. and 12.. Grades)”, 2024). What is wanted here is to question the level of differentiation included in the programs.

2. METHODOLOGY

2.1. Model of the Research

Qualitative research is model of the research ; model of the method is document review method.

2.2. Research Process

The data of this study consists of the the Differentiation in the 2018 High School Mathematics (9., 10., 11. and 12. grades) and 2024 High 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>. Both curriculum examined are official curriculum used in Turkey.

The Differentiation statements in both mathematics curriculum were read and interpreted comparatively.

In the study, sentences and paragraphs included in Differentiation were used as the unit of analysis. Finally, findings and results based on the Differentiation in both programs in terms of similarities and differences were presented.

In the differentiation of the 2018 High school (9., 10, 11. and 12. grades) mathematics curriculum, there is no differentiation section for each subject. However, in the of the 2024 High School (9., 10, 11. and 12. grades) mathematics curriculum, there is a differentiation section for each subject. For this reason, the differentiation section of one of the subjects was selected and included in the analysis. The subject selected for analysis is the subject “**THEME 3: Statistical Research Process** in the 2024 High School Mathematics Course (11th Grade)”

THEME 3: Statistical Research Process: In this theme, the aim is for students to be able to conduct a statistical research process in the context of real-life situations focusing on the relationship between two quantitative variables; and to be able to critically evaluate statistical visuals, summaries, results, interpretations, inferences and/or predictions related to data distributions focusing on the relationship between two quantitative variables created by others.

4.FINDINGS

Table 1 Differentiation in The 2018 High School Mathematics Curriculum

Curriculum is structured with sensitivity to individual differences in mind. Individual differences stemming from genetic, environmental, and cultural factors also manifest themselves in terms of interests, needs, and orientations. Furthermore, this also encompasses interpersonal and intrapersonal differences. Individuals differ both from others and from their own unique characteristics. For example, an individual's ability to think abstractly may be strong, while their drawing skills may be weak.

Table 2 Differentiation in The 2024 High School Mathematics Curriculums

While the expected knowledge and skills for students are the same across learning outcomes, the pace of progress and the knowledge and skills needed during the process may differ from one student to another. This is addressed in the context of "differentiation" in the Secondary School Mathematics Curriculum. "Enrichment," a dimension of differentiation, is designed for students who can more quickly understand more complex and abstract information and apply the knowledge and skills targeted in the program more effectively. Enrichment activities include explanations of the content, methods, and processes that will allow students to deepen their learning without straying from the content framework. In this sense, enrichment activities prioritize interdisciplinary connections and real-life applications, as well as interdisciplinary connections within the context of the content.

Suggestions for creating learning opportunities where students can effectively use technology and digital platforms to produce digital content in line with performance tasks are also presented within the context of enrichment. The other dimension of differentiation, "support," is designed for students who need more concrete examples,

daily life contexts, concrete material support, and visualization to achieve the knowledge and skills targeted by the program. Support activities emphasize the applications students need, the tools, equipment, and technology available, peer learning through group work in the classroom, and the role of teachers in the process, all without compromising the knowledge and skills targeted by the program. Furthermore, suggestions are presented under the heading of support to ensure students can effectively utilize digital platforms.

Differentiation on THEME 3: STATISTICAL RESEARCH PROCESS

Enrichment: Students are asked to develop a research question by identifying two appropriate quantitative variables from the multivariate data sets they are given, and to design and implement a statistical research process accordingly. Students are encouraged to share their findings with their peers and express their experiences through presentations, posters, infographics, or by creating content in digital media.

Students are asked to investigate situations involving statistical visuals, summaries, conclusions, interpretations, inferences, and/or predictions involving distributions of two quantitative variables. They are expected to share information about which sources (such as newspaper articles, digital sources, and official sources) they can use when investigating these situations and what to consider when using them. They may be asked to critically evaluate the points they discover in this research. For example, students are asked to evaluate the results of a study examining the relationship between the thickness of the outer cortex of individuals' brains and their intelligence. Students are then asked to assess the consistency between the results, the visual (scatter plot), and the numerical value (correlation coefficient), as well as the presence of biased, inaccurate, or missing information. Students are encouraged to share these evaluations with their peers and

express their experiences through tools such as presentations, posters, infographics, or by creating content in digital environments.

Students are asked to perform calculations based on real-life situations using the formula provided to calculate the correlation coefficient. These calculations utilize technological tools (e.g., calculators). During this process, students are expected to provide and articulate justifications for their calculations.

Students are asked to analyze a scientific study conducted using the correlational research method and discuss it with their friends.

Supporting: Group work is used to engage students in a statistical research process involving the relationship between two quantitative variables. Groups are arranged heterogeneously, allowing students to understand the statistical research process through peer learning.

Students are asked to create research questions, collect data, analyze and interpret these data based on quantitative data sets (such as height, temperature values) that they are more likely to encounter in their daily lives.

Students are encouraged to work on smaller data sets.

Students are presented with statistical visuals, summaries, results, interpretations, inferences, and/or predictions focusing on the relationship between two quantitative variables at a simpler level (such as involving situations with which students are more familiar), and are asked to evaluate them.

The 2018 program emphasized the importance of individual differences. It emphasized that curriculum structures were structured with sensitivity to individual differences in mind. These sensitivities were also emphasized in the 2024 program. Compared to the 2018 program, the 2024 program addresses differentiation in a more comprehensive manner. The 2024 program provides information on differentiation for every subject in grades 9, 10, 11, and 12. Differentiation, under the heading of enrichment and support, was designed and implemented for students with individual differences.

CONCLUSION

Classroom instructional differentiation involves educators adapting instructional elements to meet the needs of diverse students. It is generally considered a crucial component of high-quality education that promotes equitable and inclusive opportunities for all students (Jager, Denessen, Cillessen, & Meijer, 2022). In this respect, the 2024 High School Mathematics program is at the desired level compared to the 2018 High School Mathematics program. The 2024 program emphasizes individual differences in each subject. Better development of programs in this regard could undoubtedly lead to further advancements in education.

Teachers will be able to better prepare their lessons accordingly. Students' desire to learn and their success will also increase. It's important to remember that a country's prosperity depends on the quality of education.

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