Do Reading Texts in Science Textbooks Contribute to Values Education?

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Abstract: Values education refers to a form of character education that comprehensively imparts various human values to students. It holds great significance to instill in students the values embraced by society through textbooks at the middle school level. Hence, this study aims to assess the extent to which reading texts (or reading passages) in science textbooks, aligned with the Turkish Science Curriculum implemented in 2018, address the ten root values adopted by the Ministry of National Education. The research employs the document analysis method, a qualitative research approach. Four science textbooks taught at the 5th, 6th, 7th, and 8th grade levels were analyzed within the study. The data were subjected to content analysis, and the findings reveal that the reading texts in the four science textbooks partially incorporate the ten root values. The results of this study demonstrated that despite being abstract course, science textbooks emphasize the majority of the ten root values, albeit not all of them extensively. This finding is a significant indication that the type and content of the course do not hinder to boost values education. At the end of the study, a few suggestions were made to ensure that the ten root values are acquired by students.

Keywords: Values education, science education, science textbooks, reading texts, root values

Fen Bilimleri Ders Kitaplarındaki Okuma Metinleri Değerler Eğitimine Katkı Sağlar mı?

Öz: Değerler eğitimi, öğrencilere çeşitli insani değerleri kapsamlı bir şekilde aktaran bir karakter eğitimi biçimini ifade eder. Ortaokul düzeyinde ders kitapları aracılığıyla öğrencilere toplum tarafından benimsenen değerlerin kazandırılması büyük önem taşımaktadır. Dolayısıyla bu çalışma, 2018 yılında uygulamaya konulan Fen Bilimleri Dersi Öğretim Programı ile uyumlu fen bilimleri ders kitaplarında yer alan okuma metinlerinin (veya okuma parçalarının) Millî Eğitim Bakanlığı tarafından benimsenen on kök değeri ne ölçüde ele aldığını değerlendirmeyi amaçlamaktadır. Araştırmada nitel bir araştırma yaklaşımı olan doküman analizi yöntemi kullanılmıştır. Çalışma kapsamında 5, 6, 7 ve 8. sınıf düzeyinde okutulan dört fen bilimleri ders kitabı analiz edilmiştir. Veriler içerik analizine tabi tutulmuş ve elde edilen bulgular, dört fen ders kitabındaki okuma metinlerinin on kök değeri kısmen içerdiğini ortaya koymuştur. Bu çalışmanın sonuçları, fen bilgisi ders kitaplarının soyut bir ders olmasına rağmen on kök değerin tamamına olmasa da büyük çoğunluğuna vurgu yaptığını göstermiştir. Bu sonuç, dersin türü ve içeriğinin değerler eğitimini vermede engel olmadığının önemli bir göstergesidir. Çalışmanın sonunda, on kök değerin öğrencilere kazandırılması için bazı önerilerde bulunulmuştur.

Anahtar kelimeler: Değerler eğitimi, fen eğitimi, fen ders kitapları, okuma metinleri, kök değerler

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Introduction

Human being is an inherently social being, living in communities and engaging with the surrounding environment. Societies are formed when individuals come together; however, mere physical presence is not sufficient for societal cohesion. Societies require a set of bonds to unite their members (Kan, 2010; Kumbasar, 2011; Yılmaz, & Kıran, 2023). One such bonding factor is culture, which reflects the unique common values of each society. It is the adherence to these shared values that fosters unity within societies and ensures their continuity. To maintain the continuity of societies, it is essential to nurture individuals who understand the society's values and are capable of passing them down to future generations (Güvenç, 1970; Meço & Coştu, 2023; Yılmaz, & Kıran, 2023). The rapid advancement of technology worldwide has increased communication between societies and thus led to increased cultural exchange. This cultural exchange, in turn, facilitates the transfer of existing societal values to other communities. Values can vary significantly between different societies, with what may be deemed important in one society not necessarily being well-received in another (Yaman, 2012; Yılmaz & Kıran, 2023). The concept of value, as defined in dictionaries as "an abstract measure, the worth of something, or the equivalent of something" is indeed subject to change over time (Turkish Language Association [TLA], 2022). Global developments have also brought about numerous changes in people's lifestyles. Consequently, certain values have gradually lost their significance (Çetinbaş, 2015; Ecerkale, 2019; Yılmaz & Kıran, 2023). For instance, the increased usage of social media has led individuals to share their every action in such platforms, fostering a more self-centered approach and potentially diminishing qualities like cooperation, respect, and empathy (Dilek, 2017; Karaduman et al., 2017; Yılmaz & Kıran, 2023).

Values are not inherent in humans; instead, they are acquired through social learning. The social environment plays a crucial role in shaping an individual's values. The primary environment where values begin to take root is the family. Hence, value education commences in the family setting, just like other aspects of education (Başcı, 2012; Karaduman et al., 2017; Yılmaz & Kıran, 2023). In the family environment, children are prepared for society and acquire the values, traditions, customs, and beliefs of their community. As the foundation of value education, the family facilitates children in understanding and internalizing their values, making it crucial for their personality development (Akyol, 2010; DeCastro-Ambrosetti & Cho, 2005; Yorulmaz, 2017). However, each family interprets and applies values differently, influenced by various economic, cultural, and social factors, resulting in individuals developing distinct value systems. Consequently, to foster individuals with shared value judgments and to ensure value education progresses in a systematic and organized manner, it is essential to continue value education in the school environment (Aneja, 2014; Çelikkaya et al., 2014; Kanagatova, 2018). Schools, as educational institutions, play a crucial role in the holistic development of students, encompassing both cognitive and affective aspects. In fact, upon examining the overarching objectives of schools, it becomes evident that they aim to nurture individuals who have internalized fundamental human values. As such, both in-school and out-of-school activities hold significant importance in the cultivation of values (Aneja, 2014; Deveci & Ay, 2009; Yıldırım, 2009). The emphasis on academic success in schools has been linked to various social issues. In recent years, there has been a rise in negative incidents such as violence, sexual abuse, and intolerance towards differences, underscoring the significance of value education (Çetinbaş, 2015; Meço & Coştu, 2023; Susar Kırmızı, 2014; Şentürk, 2008). Educators and researchers have recognized that value education is no longer just an important aspect but rather a necessity. In response to this concern, the Ministry

of National Education (MoNE) has taken proactive steps to address the issue and has developed interactive learning materials (e.g., MoNE, 2022, 2023). Furthermore, numerous studies have been conducted in recent years to explore this topic (e.g., Akdemir, 2022; Herdem & Çinici, 2021; Meço & Coştu, 2023; Şentürk, 2020; Topal, 2019). Value education was initially introduced into school curricula in 2005. Subsequently, since 2010, there has been an increasing momentum in research and initiatives pertaining to value education. The most recent curriculum update in 2018 placed significant emphasis on value education, making it a central component of the curriculum. As part of this update, 10 root values were identified, and the attitudes and behaviors aligned with these values were expounded upon (MoNE, 2017, 2018). Both in the emphasis on values education in the curriculum and as stated in the relevant literature (e.g., Akdemir, 2022; Aktepe et al., 2020), it can be argued that teachers play the most crucial role in imparting values education to students (Aneja, 2014; Topal, 2019). Therefore, regardless of their subject area, teachers should not only provide students with knowledge and skills within their discipline but also ensure that students embrace the cultural and societal values embraced by the community, fostering a national ethics. In this regard, textbooks serve as the teacher's primary support and reference source (e.g., Akdemir, 2022; Koltaş, 2020; Meço & Coştu, 2023).

When considering value education, social courses often come to mind. However, value education does not solely belong to specific subjects but rather possesses an interdisciplinary structure. Initially, it might seem that the science course is not aligned with values education (Meço & Coştu, 2023). Nevertheless, upon examining the course's content and objectives, it becomes evident that it constitutes a significant component of value education (Akdemir, 2022; Herdem & Çinici, 2021; Meço & Coştu, 2023; Şentürk, 2020). Science is an endeavor to comprehend the occurrences in nature through the examination of natural phenomena. Every event unfolding in nature becomes a subject of scientific exploration. Consequently, science is a course intrinsically connected to life (Herdem & Çinici, 2021; Laçin Şimşek, 2004). It is not solely a subject that provides information about the events taking place around us. Rather, it fosters a mindset grounded in logical reasoning and inquiry. Moreover, it encompasses scientific process skills, such as hypothesis formulation, observation, data collection, and the presentation of findings (e.g., Aydoğdu, & Kesercioğlu, 2005; Çepni, 2019; Tekbıyık & Çakmakcı, 2018).

Science is a subject through which students not only acquire cognitive knowledge but also develop personality traits in the affective domain (Herdem & Çinici, 2021; Polat, 2021; Yaman, 2019). For instance, while conducting experiments, students imbibe values such as cooperation, responsibility, and ethics. Moreover, the inclusion of topics concerning nature and the environment in the science curriculum fosters the development of values associated with sensitivity towards the natural world and environmental concerns. When considering these aspects collectively, it becomes apparent that the science course is closely intertwined with values (Laçin Şimşek, 2004; Şentürk, 2020; Yaman, 2019). Since 2004, the vision of the science course has been to cultivate science-literate individuals. Science-literate individuals are defined as individuals who engage in research, questioning, problem-solving, and possess creative thinking skills (MoNE, 2013; Tekbıyık, & Çakmakcı, 2018). The science curriculum has undergone mainly four revisions in the past 16 years. Upon examining these updates in 2005, 2013, 2017 and 2018, it is evident that value education has been given more prominence in the science curriculum (MoNE, 2005, 2013, 2017, 2018; Tekbıyık, & Çakmakcı, 2018). In the 2005 science curriculum (MoNE, 2005), value education was delineated into three learning areas: Science-Technology-Society-Environment (STSE), attitudes and values, and science process skills-SPS-(Karatay et al., 2013; Tekbıyık & Çakmakcı, 2018). In 2013, an

amendment was introduced to the existing program, and the domain of affective learning was added, along with SPS and STSE areas (Karatay et al., 2013; MoNE, 2013; Tekbıyık & Çakmakcı, 2018). With the latest amendment in 2018, value education is incorporated into the program under the title of "root values", with clear definitions (Deveci, 2018; MoNE, 2018; Topal, 2019). The root values identified in the science curriculum are justice, friendship, honesty, self-control, love, respect, responsibility, patience, patriotism, and benevolence.

Numerous materials are employed during educational activities, and textbooks are one such essential resource (Akdemir, 2022; Meço & Coştu, 2023). Textbooks encompass the curriculum's objectives and contents, presenting information tailored to students' proficiency levels. They play a pivotal role in education, as they reflect the curriculum and offer easy accessibility for both students and teachers (Akdemir, 2022; Meço & Coştu, 2023). In fact, textbooks may be the sole materials readily available to students, especially during the current pandemic period, even for those facing challenges in accessing the internet. One of the objectives of textbooks is to facilitate students' acquisition of values and target behaviors specified in the curriculum (e.g., Akdemir, 2022; Kete & Acar, 2007; Meço & Coştu, 2023; Yıldırım, 2007). Particularly, concerning value education, textbooks serve as a crucial source. Thus, the content of textbooks holds significance. Ensuring that the activities in the textbooks align with the values outlined in the curriculum yields positive outcomes for value education. The incorporation of such activities into textbooks, which are easily accessible to students and teachers, becomes highly influential in enabling students to internalize the values stipulated in the curriculum (Meço & Coştu, 2023; Şahin & Ersoy, 2012; Yılmaz & Kıran, 2023).

In the relevant literature (both national and international), it has been found that numerous textbooks have been examined at primary, secondary, and high school levels, but very few books have been analyzed in the context of values education at the preschool level. Among textbooks at all levels of education, the "Turkish" course was the discipline in which the most examinations were conducted in the context of values education (e.g., Derse, 2019; Ecerkale, 2019; Ketenalp & Bulut, 2022; Tokmak & Aktaş, 2022), followed by the "Social Studies" course (e.g., Güçlü, 2019; Toraman & Memişoğlu, 2022). In addition to these two disciplines, textbooks were also analyzed in other courses such as "English" (e.g., Özyuva & Yamaç, 2022), "Life Science" (e.g., Öztürk & Özkan, 2018), "Music" (e.g., Turhal & Varış, 2022), "Geography" (e.g., Aydın, 2019), "German" (e.g., Selçuk, 2019), and more. In comparison to these disciplines, it can be stated that there are relatively few textbooks in the field of science analyzed in the context of values education. Although their number is relatively small, when examining the studies (e.g., Akdemir, 2022; Koltaş, 2020; Meço & Coştu, 2023; Yılmaz & Kıran, 2023), it becomes evident that researchers mostly focus on the texts and visuals in the textbooks while examining values education in textbooks, but not on the reading passages (or texts) in the science textbooks. Considering the difficulty of giving the root values adopted by MoNE for each subject/concept within the scope of the science discipline course (e.g., Akdemir, 2022; Meço & Coştu, 2023; Yılmaz & Kıran, 2023), it was deemed important to analyze the reading passages (or reading texts), as they have the potential to play a crucial role in imparting root values.

The significance of this research lies in its exploration of values education within the science curriculum. Integrating values education into the science curriculum is a topic of paramount importance in the field of education. The science course, which provides a structured platform for understanding the natural world, presents a unique opportunity for instilling essential values in students (e.g., Kristiwati, 2019). By fostering ethical awareness, critical thinking, and

responsibility, values education within the science curriculum can contribute to holistic character development and informed citizenship. Values education integrated into the science curriculum has been shown to foster ethical awareness, enhance critical thinking skills, and promote a sense of responsibility among students (Sarah et al., 2018). Research indicates that such education facilitates moral development and equips students to be informed and responsible citizens in society. Research by Lapsley and Narvaez (2004) indicates that ethical education fosters moral development, while studies like Kuhn and Dean (2004) emphasize the role of critical thinking in value-based decision-making. These outcomes collectively contribute to holistic character development and prepare students to be informed and responsible citizens in society. Values education within the domains of physics, chemistry, and biology has gained increasing attention in recent international research papers (e.g., Darman et al., 2022; Kolarova et al., 2013; Sarah et al., 2018; Silfianah et al., 2021; Sjöström & Eilks 2018). Papers have explored the significance of integrating values education into the science curriculum to foster holistic character development and informed citizenship. For instance, Sarah et al. (2018) emphasized the integration of living values into physics learning, highlighting the importance of aligning educational practices with local potentials. Their study underlines the need to incorporate cultural and community values into the science curriculum to make it more relevant to students' lives. In the realm of chemistry, Sjöström and Eilks (2018) discussed the role of chemistry education in promoting values such as environmental responsibility and sustainability. They argued that chemistry can be a powerful tool for addressing real-world issues, thereby helping students recognize the ethical dimensions of scientific knowledge. The integration of values into chemistry education aligns with the broader goal of nurturing environmentally conscious citizens. In the field of biology, Kolarova et al., (2013) explored the ethical dimensions of life sciences education. Their work highlighted the importance of guiding students to consider the ethical implications of biological advancements, such as genetic engineering and cloning. This approach encourages students to think critically about the ethical dilemmas posed by contemporary biological research and applications. While these studies offer valuable insights into the integration of values education within the realms of physics, chemistry, and biology, there is a need for further research that explores the effectiveness of specific pedagogical approaches in promoting values education. Additionally, cross-disciplinary studies that investigate the overarching impact of values education on students' character development and their roles as responsible citizens can contribute to a more comprehensive understanding of the subject. From this perspective, the primary objective of this study is to analyze the values portrayed in the reading texts of middle school science textbooks. Additionally, the study aims to investigate the distribution of these values based on different grade levels and learning areas within the textbooks.

Method

Research Model

Document analysis, a qualitative research method, was employed in this study. Document analysis allows for the systematic examination of written documents or contents, falling under the scope of qualitative research methods (Schreier, 2012; Yıldırım & Şimşek, 2008). In this method, existing documents are systematically scrutinized, and meanings are derived from these documents during the examination process. In essence, this method involves reaching specific conclusions about the research by analyzing written sources containing information about the phenomenon(s) under investigation (Schreier, 2012; Yıldırım & Şimşek, 2008). The textbooks subject to

examination in this study consist of a total of four textbooks, one from each grade level (5th, 6th, 7th, and 8th grades), prepared based on the "Science Course Curriculum" (MoNE, 2018) implemented in 2018 (refer to Table 1).

Sample and Population

For this research, a total of four textbooks were selected, one from each grade level (5th, 6th, 7th, and 8th grades), as part of the curriculum designated by the Ministry of National Education. These textbooks were systematically analyzed. A comprehensive overview of the analyzed textbooks is provided in the Table 1.

Table 1

Textbooks Used in the Research

Level	Authors	Publisher
5th grade	Seval AKTER Hatice Betül ARSLAN Meltem ŞİMŞEK	Ministry of National Education Publications
6th grade	Süheyla Özlem DİNÇER Erhan YİĞİT	Anadol Publishing
7th grade	Erkan AKDEMİR Dilek ÇETİN ATASOY	Ministry of National Education Publications
8th grade	Erhan YİĞİT	Adım Adım Publishing

These textbooks given in the Table 1 were chosen as they are widely used in schools across Istanbul, a prominent metropolitan city. As part of the study, the science textbooks listed in Table 1 were examined with a focus on the ten root values endorsed by Board of Education [BoE] (BoE, 2017), as outlined in Table 2.

Data Collection Tools

Data collection was conducted separately for each grade level. These textbooks given in the Table 1 were chosen as they are widely used in schools across Istanbul, a prominent metropolitan city. As part of the study, the science textbooks listed in Table 1 were examined with a focus on the ten root values endorsed by BoE (2017), as outlined in Table 2. Data collection was conducted separately for each grade level.

Table 2

Root Values Adopted by MoNE (BoE, 2017)

Values	Some Attitudes and Behaviors Related to Values
Justice	Fairness, equal treatment, sharing
Friendship	Altruism, trust, understanding, solidarity, loyalty, faithfulness, loyalty, cooperation
Honesty	Being clear and understandable, being truthful, being reliable, keeping your word
Self-Control	Controlling their behavior, taking responsibility for their behavior, having self-confidence, apologizing when necessary
Patience	Perseverance, perseverance, endurance, knowing how to wait

Respect	Being humble, treating others the way you want to be treated, valuing other people's personalities, considering the position, characteristics and situation of the interlocutor
Love	Giving importance to family unity, making sacrifices, having trust, being compassionate, being loyal
Responsibility	Being responsible for oneself, one's environment, one's homeland and one's family; keeping one's word, being consistent and reliable, and taking the consequences of one's actions
Patriotism	Being hardworking, solidarity, obeying rules and laws, being loyal, being sensitive to historical and natural heritage, caring about society
Benevolence	Being generous, cooperating, being compassionate, being hospitable, sharing

Data Analysis

The study employed a descriptive content analysis method to analyze secondary school-level science textbooks. Content analysis is used to systematically analyze the content of texts, documents, or other forms of communication to derive meaningful insights and patterns. It is a widely employed technique in various fields, including social sciences, communication, psychology, marketing, and media studies (Khoa et al., 2023).

The content analysis of the science textbooks and their reading materials was conducted collaboratively by the author, who has published several papers on values education, and an experienced science teacher with 15 years of expertise, who has contributed to a paper on the inclusion of values in science textbooks. During this process, texts mentioning any of the 10 root values specified in Table 2 were transferred to a Word document for further scrutiny. Subsequently, the relevant root value present in each document was identified and recorded accordingly. The data was then tabulated to determine the root values associated with each reading text in the science textbooks. The findings were thoroughly presented and interpreted in the results section.

The process of analyzing science textbooks was conducted collaboratively by the author and an experienced science teacher. Initially, the author and the science teacher jointly examined the reading passages in the science textbooks, identifying the emphasized root values and sub-values present in the statements and explanations within these texts. Subsequently, the recorded explanations or statements highlighting values were compiled in a word document. The document was then presented to a science education expert who specializes in values education. The expert was asked to independently evaluate which root values and sub-values these expressions were suitable for. The classifications made by the researcher and the science teacher regarding values were cross-checked with the classifications provided by the science educator. Remarkably, a remarkable 98% agreement was found between the two sets of classifications. In cases where discrepancies emerged, discussions were held to reach a consensus. The implementation of such a rigorous process during the analysis significantly contributed to the validity and reliability of the research findings.

Since the research presented here involves a document analysis of existing science textbooks used in middle schools, it falls under the category of exempt research, and therefore, ethics committee approval was not required.

Results

In this section, the outcomes of the research concerning the distribution of values in the 5th, 6th, 7th, and 8th grade science textbooks are presented in tables based on their respective grade levels. Additionally, direct quotations pertaining to the values found in the texts for each grade level are provided. The science textbooks published for Grade 5 were thoroughly analyzed to identify the root values they encompass, and the findings are outlined in Table 3.

Table 3

Distribution of Values in the Reading Texts in the 5th Grade Science Textbook

Unit Number	Topic Area	Reading Text	Justice	Friendship	Honesty	Self-control	Patience	Respect	Love	Responsibility	Patriotism	Benevolence	Total
1	The Earth and the Universe	Heroes of Science - Galileo Galilei	-	-	-	-	+	-	-	+	-	-	2
		After 45 Years, Journey to the Moon Again	-	-	-	-	+	--		+	-	-	2
		Show Yourself	-	+	-	+	-	-	+	+	-	-	4
		Heroes of Science Ali Kuşçu	-	-	-	-	+	+	-	+	-	+	4
2	Living Things and Life	Let's Get to Know Living Things	-	+	-	-	-	-	-	-	-	-	1
		Heroes of Science	-	-	-	-	-	+	-	-	-	-	1
3	Physical Phenomena	Measurement of Force	-	-	-	+	-	+	-	+	+	-	4
		Isaac Newton	-	-	-	-	+	+	-	+	-	-	3
		Friction Force	-	-	-	-	-	-	-	-	+	-	1
		Hazerfen Ahmet Çelebi	-	-	-	-	+	+	-	+	-	-	3
		Show Yourself	-	+	-	-	-	-	+	-	-	-	2
		Vecihi Hürkuş	-	-	-	-	-	+	-	+	+	-	3
		Revolution Car	-	-	-	-	-	-	-	+	+	-	2
4	Matter and Its Nature	It's Your Turn	-	+	-	-	-	-	-	-	-	+	2
		Show Yourself	-	+	-	-	-	-	-	-	-	+	2
		Heat and Temperature	-	-	-	-	-	-	+	+	-	-	2
5	Physical Events	Show Yourself	-	+	-	-	-	-	-	+	-	+	3
		İbn-i Heysam	-	-	-	-	-	+	-	+	-	+	3
6	Living Things and Life	Living Things and Life	-	+	-	-	-	-	+	-	-	+	3
		Show Yourself	-	-	-	-	-	-	+	+		+	3
		Human and Environment Relationship	-	+	-	+	-	-	-	+	-	+	4
		Rachel Louıse Carson	-	-	+	-	-	-	-	+	-	+	3
		It's Your Turn	+	-	-	+	-	+	-	+	+	-	5
		Show Yourself	-	-	-	-	-	-	-	-	-	+	1
		Show Yourself	-	+	-	-	-	-	-	-	-	+	2
7	Physical Phenomena	Circuit Elements	-	-	-	-	-	-	+	-	-	+	2
		Bulb Brightness	-	-	-	+	-	-	-	+	-	-	2
		Nikola Tesla	-	-	+	+	+	+	-	+	+	+	7
		Thomas Alva Edison	-	-	-	-	-	+		+	+	+	4
		Show Yourself	-	-	-	-	-	-	+	-	-	-	1
		Total	1	9	2	6	6	10	7	19	7	14	81

According to the data presented in Table 3, the 5th grade science textbook predominantly emphasizes the value of responsibility (f=19). Following this, helpfulness (f=14), respect (f=10), and friendship (f=9) are also given significant attention. Values such as love (f=7), patience (f=6), self-control (f=6), and honesty (f=2) are relatively less common. Furthermore, the value of justice (f=1) is addressed in a limited manner. Here are some direct quotations that illustrate the incorporation of specific values in the 5th grade science textbook:

For the root value of honesty: "*He was known for his research on the insecticide DDT, which was widely used in the USA in the 1940s and was seen as a miracle drug. He wrote a book explaining that this pesticide not only kills agricultural pests but also harms the whole environment, causing poisoning, birth defects, and deaths in humans by being stored in plants.* (In Turkish, *ABD'de 1940'lı yıllarda sıkça kullanılan ve bir mucize ilaç olarak görülen DDT adlı böcek ilacı üzerine yaptığı araştırmalarıyla tanınmıştır. Bu ilacın yalnızca tarım zararlılarını öldürmekle kalmadığını, bütün çevreye zarar verdiğini, bitkilerde depolanarak insanlarda zehirlenmelere, sakat doğumlara ve ölümlere neden olduğunu açıklayan bir kitap kaleme aldı*)".

For the root value of patriotism: "*Seyit Onbaşı, one of the heroes of the Gallipoli War, managed to drive a 275-kilogram cannonball into the barrel by himself.* (In Turkish, *Çanakkale Savaşı kahramanlarından Seyit Onbaşı, 275 kilogramlık top mermisini tek başına namluya sürmeyi başarmıştır*)".

For the root value of friendship: "*Azra bought her cousin Öykü a beautiful ring as a present for her birthday.* (In Turkish, *Azra, kuzeni Öykü'ye doğum gününde hediye olarak güzel bir yüzük aldı*)".

For the root value of love: "*Baby Oğuz was hungry. His father heated milk for him and poured it into a bottle.* (In Turkish, *Oğuz bebek acıkmıştı. Babası ona süt ısıtıp biberona doldurdu*)".

For the root value of responsibility: "*It is the duty of all people to leave clean water resources and a livable environment for the next generations.* (In Turkish, *Bizden sonraki nesillere temiz su kaynakları ve yaşanabilir bir çevre bırakmak tüm insanların görevidir*)".

The reading texts in the 6th grade science textbook were subjected to analysis to identify the root values they encompass. The findings from this analysis are presented in Table 4. According to Table 4, the 6th grade science textbook places the most emphasis on the value of responsibility (f=20). Following this, the values of friendship (f=10) and helpfulness (f=10) are highlighted. Then, the values of self-control (f=9), respect (f=9), patriotism (f=8), and love (f=7) are also included. However, patience (f=3) is given less attention compared to others, while justice (f=0) and honesty (f=0) are not addressed. Here are some direct quotations that illustrate the incorporation of specific values in the 6th grade science textbook:

For the root values of self-control and patriotism: "*According to your abilities, you can develop yourself in a sports branch and represent our country in international sports competitions. With the achievements you obtain, you can raise our flag and let our National Anthem be heard by people from other nations.* (In Turkish, *Siz de yeteneklerinize göre bir spor dalında kendinizi geliştirebilir ve ülkemizi uluslararası spor müsabakalarında temsil edebilirsiniz. Elde ettiğiniz derecelerle bayrağımızı göndere çektirebilir ve İstiklâl Marşı'mızı başka milletlerden insanlara dinletebilirsiniz*)".

For the root value of self-control: "*Yesterday, I left the room without listening to the advice my mother gave me about my lessons. After a while, feeling regretful about my behavior, I apologized to my mother.* (In Turkish, *Dün, annemle derslerim hakkında konuşurken verdiği tavsiyeleri dinlemeden odadan çıktım. Bir süre sonra yaptığım davranıştan pişmanlık duyarak annemden özür diledim*)".

Table 4

Distribution of Values in the Reading Texts in the 6th Grade Science Textbook

Unit Number	Topic Area	Reading Text	Justice	Friendship	Honesty	Self-control	Patience	Respect	Love	Responsibility	Patriotism	Benevolence	Total
1	The Earth and the Universe	Turkish Space Agency	-	-	-	-	-	-	-	+	+	-	2
		How Does a Solar Eclipse Happen?	-	+	-	-	-	-	-	-	-	+	2
		Observatory	-	-	-	-	-	+	-	+	+	-	3
2	Living Things and Life	Journey into the History of Science	-	-	-	-	+	-	-	+	-	+	3
3	Physical Phenomena	What is Speed?	-	-	-	+	+	-	-	+	+	-	4
		Türkiye's First Flying Car: Cezeri	-	-	-	-	-	+	-	+	+	+	4
4	Matter and Its Nature	What is Density?	-	-	-	-	-	-	-	+	+	-	2
		Let's Think-Discuss	-	-	-	-	-	-	+	+	-	-	2
		Türkiye's Drillships	-	-	-	-	-	+	-	+	+	-	3
		Dams	-	-	-	-	-	-	-	+	+	-	2
5	Physical Events	Domino	-	+	-	-	-	-	-	-	-	-	1
6	Living Things and Life	Ahmet's Diary	-	+	-	+	-	+	+	+	-	-	5
		Do You Know These? - Visually Impaired	-	+	-	-	-	+	+	-	-	+	4
		Bone Development	-	-	-	+	-	-	-	-	-	-	1
		Obesity	-	+	-	+	-	+	-	-	-	-	3
		Physical Activity and Cardiovascular Health	-	-	-	+	-	-	-	+	-	-	2
		First Aid is Everyone's Responsibility	-	+	-	-	-	-	+	+	-	+	4
		Coronavirus	-	+	-	-	+	-	-	+	+	+	5
		Smoking Effects	-	-	-	+	-	+	-	+	-	+	4
		Hypertension and Kidney Diseases	-	-	-	+	-	-	-	+	-	-	2
		Medicines Use	-	-	-	+	-	-	-	+	-	-	2
		Diabetes	-	-	-	+	-	-	-	+	-	-	2
		Organ Donation in Izmir	-	+	-	-	-	+	+	+	-	+	5
		Organ Donation	-	+	-	-	-	-	+	+	-	+	4
		Healthy Generations Healthy Life - Interview	-	+	-	-	-	+	+	+	-	+	5
7	Physical Phenomena	---	-	-	-	-	-	-	-	-	-	-	-
		Total	-	10	-	9	3	9	7	20	8	10	76

For the root value of friendship: "*I was talking to my best friend Tarık, with whom I get along very well and trust the most.* (In Turkish, *Çok iyi anlaştığım ve en güvendiğim arkadaşım Tarık'la dün konuşuyordum*)".

For the root value of respect: "*When we see a visually impaired person walking on the street with a white cane in our neighborhood, we should make an effort to treat them with respect*. (In Turkish, *Yaşadığımız yerleşim biriminde beyaz bastonuyla yolda yürüyen bir görme engelli gördüğümüzde ona karşı saygılı davranmaya özen göstermeliyiz*)".

For root values of responsibility and benevolence: "*In the future, you can also become a first aider by taking first aid training. This way, in case of an accident or life-threatening situation, you can contribute to people's survival until medical personnel arrive.* (In Turkish, *Siz de ileride ilk yardım eğitimi alarak ilk yardımcı olabilirsiniz. Böylece kaza ya da yaşamı tehlikeye düşüren bir durumda, sağlık görevlileri gelinceye kadar insanların yaşama tutunmasına katkı sağlayabilirsiniz*)".

The reading texts in the 7th grade science textbook were subjected to analysis to identify the root values they encompass. The findings from this analysis are presented in Table 5.

Table 5

Distribution of values in the reading texts in the 7th grade science textbook

Unit Number	Topic Area	Reading Text	Justice	Friendship	Honesty	Self-control	Patience	Respect	Love	Responsibility	Patriotism	Benevolence	Total
1	The Earth and the Universe	Do You Know These?	-	+	-	-	-	-	-	-	-	+	2
		Observatory	-	-	-	-	-	-	-	-	+	+	2
2	Living Things and Life	Cell	-	+	-	-	-	-	-	-	-	+	2
		Aziz Sancar	-	-	+	-	-	-	-	+	+	-	3
3	Physical Phenomena	Bird's Beak and the World's Fastest Train	-	-	-	-	-	-	-	+	-	-	1
4	Matter and Its Nature	Domestic Waste and Recycling	-	+	-	+	-	+	-	+	+	-	5
		Do You Know These?	-	-	-	-	-	-	-	+	-	-	1
		Let's not forget	-	-	-	-	-	-	-	+	-	-	1
		Reading Passage	-	-	-	-	-	-	-	+	+	+	3
5	Physical Events	Reading Passage	-	+	+	+	-	-	+	+	-	+	6
		İbn-i Heysem	-	-	-	-	+	-	-	+	-	+	3
6	Living Things and Life	Live Care	-	-	-	+	-	-	+	+	-	+	4
7	Physical Phenomena	Lighting Vehicle	-	-	-	-	+	-	-	+	-	+	3
		Total	-	4	2	3	2	1	2	10	4	8	36

According to Table 5, the 7th grade science textbook includes the value of responsibility (f=10) the most. This is followed by benevolence (f=8), patriotism (f=4), friendship (f=4), self-

control (f=3), patience (f=2), love (f=2), honesty (f=2), and respect (f=1), while justice is not included at all. Here are some direct quotations that illustrate the incorporation of specific values in the 7th grade science textbook:

For the root value of responsibility: "*Whatever you do, do it well, work hard!* (In Turkish, *Ne yapıyorsanız iyi yapın, çok çalışın!*" (Prof. Dr. Aziz Sancar)".

For the root values of responsibility and self-control: "*It should be kept in mind that natural resources are not infinite, and if they are not used carefully, they will one day run out.* (In Turkish, *Tabii kaynakların sonsuz olmadığı, dikkatlice kullanılmadığı takdirde bir gün bu doğal kaynakların tükeneceği akıldan çıkarılmamalıdır*)".

For the root values of friendship and love: "*He warns Azra and her friends to be careful by saying that the lake is deeper than they thought.* (In Turkish, *Gölün tahmin ettiklerinden daha derin olduğunu söyleyerek Azra ve arkadaşlarını dikkatli olmaları konusunda uyarır*)".

For the root value of patience: "*With his approach based on mathematical analysis, he carried out a modern mathematical physics study with his extremely careful and detailed experiments.* (In Turkish, *Matematiksel incelemeye dayanan yaklaşımı ile, yaptığı son derece özenli ve ayrıntılı deneylerle modern anlamda bir matematiksel fizik çalışması gerçekleştirmiştir*)".

For the root values of love and benevolence: "*Istanbul Metropolitan Municipality organizes trainings for children on the care and feeding of stray animals with the "Love in my Garden" project.* (In Turkish, *İstanbul Büyükşehir Belediyesi, "Bahçemde Sevgi" projesiyle sokak hayvanlarının bakımı ve beslenmeleri ile ilgili çocuklar için eğitimler düzenliyor*)".

The reading texts in the 8th grade science textbook were subjected to analysis to identify the root values they encompass. The findings from this analysis are presented in Table 6. According to Table 6, it was found that the 8th grade science textbook emphasized the value of responsibility (f=12) the most. The values of self-control (f=9), helpfulness (f=9), friendship (f=6), patriotism (f=6), honesty (f=5), love (f=5), patience (f=4), and respect (f=4) were less emphasized. The value of justice (f=2) was only emphasized twice. Here are some direct quotations that illustrate the incorporation of specific values in the 8th grade science textbook:

For the root values of love, respect, and benevolence: "*Mendel's sister Theresa (Teresa) gave some of the money she had saved to Mendel to continue his education. Mendel later showed his loyalty by supporting Theresa's three sons in their education.* (In Turkish, *Mendel'in kız kardeşi Theresa (Teresa), biriktirdiği paranın bir kısmını okumaya devam etmesi için Mendel'e verdi. Mendel duyduğu vefayı daha sonraları Theresa'nın üç oğluna öğrenimleri için destek sağlayarak gösterdi*)".

For the root value of love: "*The mother camel was very happy to see her baby camel being curious and asking questions.* (In Turkish, *Anne deve, yavrusunun bu meraklı hâllerine ve aklına takılan soruları sormasına çok sevinmiş*)".

For the root values of responsibility and self-control: "*As the administration, we also have a responsibility for our district to face such an environmental problem. For this reason, I apologize to all our citizens and promise that necessary measures will be taken.* (In Turkish, *İlçemizin böyle bir çevre problemiyle karşılaşmasında yönetim olarak bizim de sorumluluğumuz var. Bu nedenle tüm vatandaşlarımızdan özür diliyor, gerekli tedbirlerin alınacağına dair söz veriyorum*)".

For the root values of respect and patriotism: "*He was the first and only Turk elected as a member of the American Academy of Arts and Sciences. He was twice nominated for the Nobel Prize in Chemistry. Prof. Dr. Oktay Sinanoğlu's life is full of achievements that set an example for many people.* (In Turkish, *Amerikan Bilim ve Sanat Akademisine üye seçilen ilk ve tek Türk oldu. İki defa Nobel Kimya Ödülü'ne aday gösterildi. Prof. Dr. Oktay Sinanoğlu'nun hayatı birçok insana örnek olacak başarılarla doludur*)".

Table 6

Distribution of Values in the Reading Texts in the 8th Grade Science Textbook

Unit Number	Topic Area	Reading Text	Justice	Friendship	Honesty	Self-control	Patience	Respect	Love	Responsibility	Patriotism	Benevolence	Total
1	The Earth and the Universe	Weather forecasts	-	-	-	+	+	-	-	+	-	-	3
2	Living Things and Life	From the Press	-	-	-	-	-	-	+	-	+	-	2
		Hereditary diversity	-	-	-	-	-	+	-	-	-	-	1
		Pioneers of science	+	+	+	+	+	+	+	+	-	+	9
		Phenylketonuria	-	-	-	+	-	-	-	+	-	-	2
		Adaptation	-	+	-	-	+	-	+	-	-	+	4
		Agriculture biotechnology	-	+	-	-	-	-	-	-	+	+	3
3	Physical Phenomena	-	-	-	-	-	-	-	-	-	-	-	-
4	Matter and Its Nature	Acid rain	-	-	-	+	-	-	+	+	-	-	3
		Waste water treatment plant	-	-	+	+	-	-	-	+	+	-	4
		Chemistry-based professions	-	-	-	-	-	+	-	+	+	+	4
5	Physical Events	Archimedes	-	-	-	+	-	-	-	+	+	+	4
6	Living Things and Life	Food chain	-	+	-	-	-	-	-	-	-	+	2
		Pioneers of science	-	-	-	-	+	-	-	+	-	-	2
		Ozone depletion	+	+	+	+	-	+	-	+	+	+	8
7	Physical Phenomena	Lightning	-	-	-	+	-	-	-	+	-	-	2
		Benjamin Franklin	-	-	+	-	-	-	-	+	-	-	2
		Robots everywhere	-	-	-	-	-	-	-	-	-	+	1
		Brainstorming	-	+	+	+	-	-	+	+	-	+	6
		Total	2	6	5	9	4	4	5	12	6	9	62

For the root values of responsibility, patriotism, and self-control: "*The Montreal Protocol is an effort by countries to prevent ozone depletion. However, the responsibility for preventing ozone depletion cannot be left to countries alone. As individuals, we also need to take measures to prevent ozone depletion.* (In Turkish, *Montreal Protokolü, ülkelerin ozon tabakasının incelmesini önlemeye yönelik yaptığı bir çalışmadır. Ancak ozon tabakasının incelmesini önleme sorumluluğu tek başına ülkelerin üzerine bırakılamaz. Bireysel olarak bizlerin de ozon tabakasının incelmesini önlemeye yönelik almamız gereken tedbirler vardır*)".

The distribution of the root values in the 5th, 6th, 7th, and 8th grade science textbooks included in the study was analyzed according to the learning areas, and the findings are presented in Table 7.

When analyzing Table 7, it becomes evident that responsibility (f=57) was the most prevalent value across the 5th, 6th, 7th, and 8th grade levels. Following this, benevolence (f=39), friendship (f=28), self-control (f=25), patriotism (f=22), respect (f=21), love (f=20), patience (f=12), and honesty (f=9) were also emphasized, while justice (f=3) was mentioned only three times.

Table 7

Distribution of Values in 5th, 6th, 7th, and 8th Grade Science Textbooks

Topic Area	Grade	Justice	Friendship	Honesty	Self-control	Patience	Respect	Love	Responsibility	Patriotism	Benevolence	Total	Overall
The Earth and the Universe	*5th*	-	1	-	1	2	1	1	4	-	1	11	25
	6th	-	1	-	-	-	1	-	2	2	1	7	
	7th	-	1	-	-	-	-	-	-	1	2	4	
	8th	-	-	-	1	1	-	-	1	-	-	3	
Physical Phenomena	*5th*	-	1	1	2	1	3	2	5	2	4	21	60
	6th	-	1	-	1	1	2	-	4	4	2	15	
	7th	-	1	1	1	2	-	1	4	-	3	13	
	8th	-	1	2	2	-	-	1	3	-	2	11	
Matter and Its Nature	*5th*	-	2	-	-	-	-	1	1	-	2	6	36
	6th	-	-	-	-	-	1	1	4	3	-	9	
	7th	-	1	-	1	-	1	-	4	2	1	10	
	8th	-	-	1	2	-	1	1	3	2	1	11	
Living Things and Life	*5th*	1	4	1	2	-	2	2	4	1	6	23	115
	6th	-	8	-	8	2	6	6	12	1	8	51	
	7th	-	1	1	1	-	-	1	2	1	1	8	
	8th	2	5	2	3	3	3	3	4	3	5	33	
	Total	3	28	9	25	12	21	20	57	22	39		236

Furthermore, when considering the distribution of root values in relation to learning areas, the 5th grade level exhibited the highest frequency in living things and life (f=23), followed by physical events (f=21), the earth and the universe (f=11), and matter and its nature (f=6). In contrast, at the 6th grade level, the frequency of values according to learning areas was as follows: living things and life (f=51), physical events (f=15), matter and its nature (f=9), and the earth and the universe (f=7). Additionally, at the 7th grade level, the frequency of including values according to learning areas was observed in physical events (f=13), matter and nature (f=10), living things and life (f=8), and the earth and the universe (f=4). Lastly, the 8th grade level demonstrated a higher frequency in living things and life (f=33), followed by matter and nature (f=11), physical events (f=11), and the earth and the universe (f=3).

The analysis of the texts at all levels revealed that the learning area where values were emphasized the most was living things and life (f=115). This was followed by physical events (f=60), matter and its nature (f=36), and the earth and the universe (f=25). The distribution of values in the learning areas can be attributed to the number of units and subjects covered in each area. It appears that more values are emphasized in the textbooks' comprehensive learning areas.

Result and Discussion

Based on the examination of science textbooks at different levels of middle school in terms of values education, it was found that the ten root values adopted by the MoNE were included at varying rates. Specifically, in the 5th grade science textbook, the most common values were "responsibility" "benevolence", "respect," and "friendship," while "patience", "self-control", and "honesty" were the least common root values. In the 6th grade science textbook, the values of "responsibility", "benevolence", and "friendship" were most emphasized, while "patience", and "love" were the least emphasized, and "justice" and "honesty" were not included at all. In the 7th grade science textbook, "responsibility" was the most emphasized value, followed by "benevolence," and the values of "patience," "love," "honesty," and "respect" were less emphasized, with "justice" not being included at all. In the 8th-grade science textbook, "responsibility" received the most attention, while “honesty”, “love” "patience," and "respect" received less attention, and "justice" received the least attention. It was evident that responsibility, benevolence, and respect were the most commonly emphasized root values in the reading texts (or passages) of science textbooks at all levels. Furthermore, it was observed that a few root values were not included in any of the textbooks. The relatively limited inclusion of certain root values in the reading passages of science textbooks may be attributed to various factors. Firstly, while authors of the textbooks have some freedom in writing the reading passages and sections related to the lives of scientists (Akdemir, 2022; Coştu, 2022 a, b, c), they may not be able to emphasize all root values due to the abstract nature of the science course (Akdemir, 2022; Koltaş, 2020; Yılmaz & Yıldırım, 2023). Furthermore, considering that authors of the science textbooks develop their materials based on the principles outlined in the current science curriculum, the fact that the science curriculum in 2018 (Başar & Demiral, 2019; Deveci, 2018; MoNE, 2018) only mentioned the root values without providing detailed emphasis on each subject area's achievements might have influenced the level of emphasis on root values in the reading passages. To address this issue, science curriculum developed in future times could be designed to give more comprehensive attention to root values within the framework of achievements. This would allow science textbook authors to place a stronger emphasis on root values while presenting subjects and reading texts, even when discussing the lives of scientists, to further promote values education.

At the end of the study, it was observed that “justice” is one of the root values least emphasized or not addressed at all in the reading passages of science textbooks across all levels. This finding is consistent with previous research on science textbooks (Ecerkale, 2019; Koltaş, 2020; Meço & Coştu, 2023; Yılmaz & Kıran, 2023). Furthermore, a study (Pilav & Orhan, 2020) analyzing TUBITAK children's books that aim to explain science in a popular style in terms of values education also showed that the value of "justice" is rarely mentioned, supporting the results of the current study. This issue indicates that it might be challenging to incorporate the root value of "justice" in reading passages outside the core content of textbooks or in sections presented in a popular style. Similarly, another study (Özkaya & Duru, 2020) examining mathematics textbooks with abstract content in terms of values education also found that the value of "justice" was

addressed at a minimal rate. However, it is worth noting that other papers in the relevant literature demonstrated where the value of "justice" is emphasized the most. Notably, subjects like "Social Studies" (Köksal et al., 2022) and "Religious and Moral Knowledge" (Eker & Ünlü, 2020) may prioritize "justice" as they explore more concrete and current life topics. This distinction could explain why courses like science and mathematics, which focus on abstract concepts, may face challenges in including "justice" at the same level. Considering these findings, it might be beneficial to develop and present activities to science teachers that focus on the acquisition of root values in the context of science subjects. Similar to the activities provided by MoNE (2022, 2023) for teaching root values in abstract courses like science, researchers in science education can play a vital role in shaping educational materials that effectively incorporate values education into science topics.

According to another finding from the study, "patriotism," "responsibility," and "self-control" were the most prevalent root values evident in the reading passages of the science textbooks. The higher inclusion of "responsibility" and "self-control" values in science textbooks can be expected due to the nature of the science course. Throughout various units within the science curriculum, students are frequently exposed to topics related to health, environment, and nature, which inherently involve discussions about what actions to take or avoid. Consequently, it is understandable that root values like "self-control" and "responsibility" can be seamlessly integrated into the reading passages (or texts), thereby enhancing values education (Meço & Coştu, 2023). On the other hand, the prominence of the root value "patriotism" has not been widely discussed in the relevant literature as a value that students have been actively attempting to acquire in various fields and disciplines in recent years (e.g., Karaer & Karaer, 2019; Meço & Coştu, 2023). One potential explanation for this trend might be attributed to the significant impact of the military coup attempt that occurred in our country on July 15. This event was also acknowledged in a values education study (Karaer & Karaer, 2019). Similarly, in a study examining the perspectives of pre-service primary school teachers on values education (Kıral & Dinçer, 2018), it was revealed that national values and a sense of homeland were crucial to students. Students expressed answers like "patriotism" and "love for the flag," akin to the previous study. The prevalence of such responses can be attributed to the period when the unifying bond of a nation was challenged (Kıral & Dinçer, 2018).

When analyzing the reading texts in science textbooks across all levels in terms of learning areas, it was observed that the subject area of "living things and life" received the highest emphasis on root values. This finding is consistent with expectations since this subject area extensively explores the intersection of science and everyday life, making it easier to impart root values to students. Similar results were obtained in other courses like "Social Sciences" (Köksal et al., 2022) and "Religious Culture and Moral Knowledge" (Eker & Ünlü, 2020), where rules and lifestyles are extensively covered. Furthermore, significant emphasis on root values was also found in the reading texts of the science textbooks related to learning areas such as "physical events," "matter and its nature," and "the world and the universe," which are directly related to daily life beyond the scope of "living things and life" subject area.

In conclusion, the study provides valuable insights into the integration of values education in science textbooks, showcasing the varying degrees of emphasis on different root values across grade levels and learning areas. The findings offer guidance for curriculum development, pedagogical approaches, and further research in the realm of values education within science subjects. This study emphasizes the importance of fostering values education in science to nurture

holistic character development and prepare students to be informed and responsible citizens in society. Also, the significance of this research lies in its exploration of values education within the science curriculum. Integrating values education into the science curriculum is a topic of paramount importance in the field of education. The science course, which provides a structured platform for understanding the natural world, presents a unique opportunity for instilling essential values in students (Kristiwati, 2019). By fostering ethical awareness, critical thinking, and responsibility, values education within the science curriculum can contribute to holistic character development and informed citizenship. Values education integrated into the science curriculum has been shown to foster ethical awareness, enhance critical thinking skills, and promote a sense of responsibility among students (Sarah et al., 2018). Research indicates that such education facilitates moral development and equips students to be informed and responsible citizens in society (Kuhn & Dean, 2004; Lapsley & Narvaez, 2004). As demonstrated in previous research, values education within the domains of physics, chemistry, and biology has gained significant attention (Kolarova et al., 2013; Sarah et al., 2018; Sjöström & Eilks, 2018). These studies have underscored the importance of integrating cultural and community values (Sarah et al., 2018), promoting environmental responsibility and sustainability (Sjöström & Eilks, 2018), and addressing ethical dimensions in biological advancements (Kolarova et al., 2013). While these findings offer valuable insights into the integration of values education within the realms of physics, chemistry, and biology, this study contributes by providing a comprehensive examination of values education within science textbooks. It addresses the specificities of values integration across different grade levels and subject areas. Furthermore, it emphasizes the need for pedagogical approaches to enhance values education in science education, thereby broadening the discourse on character development and informed citizenship.

Suggestions

The results of this study demonstrated that despite being abstract course, science textbooks emphasize the majority of the ten root values, albeit not all of them extensively. This finding is a significant indication that the type and content of the course do not hinder to boost values education. In light of this, science educators should collaborate to determine which root values are suitable for inclusion in specific units and how to effectively incorporate them. They should then present these findings as research reports either to the textbook authors or to the Ministry of National Education (MoNE). By doing so, science textbook authors can play an active role in promoting students' acquisition of root values by considering these aspects while writing the textbooks. Alternatively, MoNE, being an official institution, can develop subject-specific activities for each discipline and make them available to teachers, similar to the activities introduced for values education since 2022 (MoNE, 2022; 2023).

Furthermore, beyond merely mentioning root values in the current science curriculum (MoNE, 2018), science curriculum developed in future times should include detailed explanations about root values in the acquisition expressed in each learning area's subjects. By implementing such an approach, textbook authors can emphasize root values more effectively during the process of presenting topics and in the reading passages (or texts) and biographical sections of the textbook. It is believed that incorporating these adjustments in the science curriculum can encourage teachers to place more emphasis on values education, in addition to the efforts made by textbook authors.

Lastly, early childhood is a formative period where children begin to absorb information, experiences, and societal norms. Numerous studies in developmental psychology, including the

works of Piaget (1965) and Erikson (1968), have underlined the significance of early years in moral and social development. These formative years are marked by heightened receptivity to external influences, making it an opportune time for the introduction of values education (Killen & Smetana, 2015). From this perspective, the study can be extended by incorporating textbooks intended for 3rd and 4th grade students, where fundamental science concepts are introduced in primary education.

Ethics Committee Permission Information: Since the research presented here involves a document analysis of existing four science textbooks used in middle schools, it falls under the category of exempt research, and therefore, ethics committee approval was not required.

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References

Akdemir, M. S (2022). *Analysis of chemistry textbooks in terms of root values* [Unpublished master thesis]. Trabzon University.

Aktepe, V., Keser, H. & Şeref, Ş. E. (2020). The Assessment of Values Education Activities According to the Primary School Teachers' Opinions. Afyon Kocatepe University Journal of Social Sciences, *22*(4), 897-918. https://doi.org/10.32709/akusosbil.781857

Akyol, Ş. (2010). *The study of affection theme in terms of moral education that joins in 6th grade Turkish course books* [Unpublished master thesis]. Çanakkale Onsekiz Mart University.

Aneja, N. (2014). The importance of value education in the present education system & role of teacher. *International Journal of Social Science and Humanities Research, 2*(3), 230-233. https://www.researchpublish.com/papers/the-importance-of-value-education-in-the-present-education-system--role-of-teacher

Aydın, H. (2019). *Examination of geography coursebooks in terms of values education approaches and opinions of geography teachers about values education* [Unpublished master thesis]. Çanakkale Onsekiz Mart University.

Aydoğdu, M. & Kesercioğlu, T. (Ed.). (2005). *Science and technology teaching in primary education*. Anı.

Başar, T., & Demiral, Ü. (2019). Comparison of 2013, 2017 and 2018 science curricula. Journal of *Uludag University Faculty of Education, 33*(1), 261-292. https://doi.org/10.19171/uefad.600882

Başcı, Z. (2012). *An investigation into value education in the grade five social sciences course according to teachers? views (sample of Erzurum)* [Unpublished PhD thesis]. Atatürk University.

Board of Education [BoE]. (2017). *On our efforts to renew and change the curriculum*. Ankara: Directorate General for Support Services.

Çelikkaya, T., Başarmak, U., Filoğlu, S., & Şahin, B. (2014). Teacher–parents' relations in the efficiency of the value education. *Procedia-Social and Behavioral Sciences, 116*, 1106-1113. https://doi.org/10.1016/j.sbspro.2014.01.353

Çepni, S. (2019). *Science and technology teaching (from theory to practice)* (19th Edition). Pegem A.

Çetinbaş, E. (2015). *Examining the competencies of primary school teachers toward values education* [Unpublished master thesis]. Akdeniz University.

Coştu, F. (2022a, December 26-27). *Examination of textbooks in the context of values education* [Paper presentation]. IX. Yıldız International Social Sciences Congress, İstanbul, Türkiye. https://sbe.yildiz.edu.tr/page/Congress--Publications/SOCIAL-SCIENCES-CONGRESS/355

Coştu, F. (2022b, December 10-11). *Examination of science textbooks in terms of values education* [Paper presentation]. Selcuk 7th International Conference on Social Sciences, Konya, Türkiye. https://www.selcukkongresi.org/

Coştu, F. (2022c, December 17-18). *Examination of science books at primary school level in the context of values education* [Paper presentation]. Karadeniz 11th International Conference on Social Sciences, Rize, Türkiye. https://www.karadenizkongresi.org/

Darmana, A., Jasmidi, J., Nasution, H. A., Fadillah, M., & Nasution, N. K. (2022). Moral lessons from the Dalton atomic theory in chemistry value education course. In AIP Conference Proceedings (Vol. 2659, No. 1). AIP Publishing. https://doi.org/10.1063/5.0122020

DeCastro-Ambrosetti, D., & Cho, G. (2005). Do parents value education? Teachers' perceptions of minority parents. *Multicultural Education, 13*(2), 44-46. https://files.eric.ed.gov/fulltext/EJ759621.pdf

Derse, G. E. (2019). *Examination of the texts in 6th grade Turkish coursebooks in terms of values education and evaluation in context of teachers' opinions* [Unpublished master thesis]. Van Yüzüncü Yıl University.

Deveci, H. & Ay, S. T. (2009). Values in daily life according to diaries of primary school students. *The Journal of International Social Research, 2*(6), 167-181. https://www.okuloncesi.net/upload/dosyalar/20111113/2321/deveci_ay.pdf

Deveci, İ. (2018). Comparison of 2013 and 2018 Science Curricula in Terms of Basic Elements in Turkey . *Mersin University Journal of the Faculty of Education, 14*(2), 799-825. https://doi.org/10.17860/mersinefd.342260

Dilek, A. (2017). Analyzing the values in Feridun Oral's books. *Journal of Values Education, 15*(33), 61-86. https://dergipark.org.tr/en/pub/ded/issue/37195/430378

Ecerkale, N. (2019). *The review of the texts in the context of the values in "Turkish Course book for seventh and eighth grade" published by the Ministry of National Education* [Unpublished master thesis]. Fırat University.

Eker, C. & Ünlü, S. (2020). An examination of Religious Culture and Moral Knowledge course book for inclusion of root values. *The Journal of International Education Science, 25*(7), 71-88. http://dx.doi.org/10.29228/INESJOURNAL.47190

Erikson, E. H. (1968). *Identity youth and crisis*. Norton.

Güçlü, H. (2019). *Evaluation of textbooks of social studies in terms of values education* [Unpublished master thesis]. Recep Tayyip Erdoğan University.

Güvenç, B. (1970). *An essay on the problem of holism in cultural theory*. Hacettepe.

Herdem, K., & Çinici, A. (2021). Effect of values education activities integrated science subjects on students' value development. *Journal of Interdisciplinary Educational Research, 5*(10), 114-138. https://dergipark.org.tr/en/pub/jier/issue/67379/993338

Kan, Ç. (2010). Social studies and values education. *Milli Egitim, 40*(187), 138-145. https://dergipark.org.tr/en/pub/milliegitim/issue/36197/407034

Kanagatova, A. (2018). *Investigating the texts in Turkish, Kazakh literature, Russian language and literature course books lectured in the 5th grade in Turkey and Kazakhstan in terms of values* [Unpublished master thesis]. Erzincan Binali Yıldırım University.

Karaduman, H., Köse, T. Ç., & Eryilmaz, Ö. (2017). Values in social media from the viewpoint of social studies teacher candidates. *Turkish Online Journal of Qualitative Inquiry, 8*(2), 250-271. https://doi.org/10.17569/tojqi.266028

Karaer, H. & Karaer, F. (2019). Opinions of chemistry teacher candidates about the values and values education in the reading piece named Aziz Sancar's success. *Journal of Values Education, 17*(37), 290-316. https://doi.org/10.34234/ded.521617

Karatay, R., Timur, S. & Timur, B. (2013). Comparison of 2005 and 2013 science course curricula. *Adiyaman University Journal of Social Sciences, 6*(15), 234-264. https://doi.org/10.14520/adyusbd.709

Kete, R. & Acar, N. (2007). The analysis of the student attitudes on the biology lycée 2 course books. *Kastamonu Education Journal, 15*(1), 221-230. https://dergipark.org.tr/tr/pub/kefdergi/issue/49108

Ketenalp, B. & Bulut, İ. (2022). Primary School 1-4. Evaluation of Teachers' Opinions on the Values in the Texts in Grade 1-4 Turkish Textbooks (The Case of Bingöl Province). *Turkish Studies - Education, 17*(2), 291-311. https://dx.doi.org/10.7827/TurkishStudies.57394

Khoa, B. T., Hung, B. P., & Hejsalem-Brahmi, M. (2023). Qualitative research in social sciences: Data collection, data analysis and report writing. *International Journal of Public Sector Performance Management, 12*(1-2), 187-209. https://doi.org/10.1504/IJPSPM.2023.132247

Killen, M., & Smetana, J. G. (2015). Origins and development of morality (pp. 701-749). In *Handbook of child psychology and developmental science.* John Wiley & Sons. http://ebookcentral.proquest.com/lib/rochester/detail.action?docID=1895802.

Kıral, B. & Dinçer, B. (2018). The viewpoints of the 4th year classroom teaching students about values education. *Adnan Menderes University Faculty of Education Journal of Educational Sciences, 9*(1), 84-94. https://dergipark.org.tr/en/pub/aduefebder/issue/38277/422016

Köksal, K., Yaylacı Kılıç, Z., Yel, Ü., Erbaş, S., & Kılcan, B. (2022). Examining of social studies textbooks in terms of root values. *Bayterek International Journal of Academic Research (BIJAR), 5*(2), 74-87. https://doi.org/10.48174/buaad.52.1

Kolarova, T., Hadjiali, I., & Denev, I. (2013). High school students' reasoning in making decisions about socio-ethical issues of genetic engineering: Case of gene therapy. *Biotechnology & Biotechnological Equipment, 27*(2), 3737-3747. https://doi.org/10.5504/BBEQ.2012.0133

Koltaş, E. (2020). *Examination of high school biology, physics and chemistry textbooks in terms of values education* [Unpublished master thesis]. Marmara University.

Kristiwati, H. (2019). The integration of values and science education in learning to strengthen the existence of Muslims in the industrial age 4.0. In International Conference of Moslem Society, Vol. 3, pp. 178-188. https://doi.org/10.24090/icms.2019.2549

Kuhn, D., & Dean, D. (2004). Metacognition: A bridge between cognitive psychology and educational practice. *Theory into Practice, 43*(4), 268-273. https://doi.org/10.1207/s15430421tip4304_4

Kumbasar, E. (2011). *Muzaffer Izgü's novels examined for values education* [Unpublished master thesis]. Karadeniz Technical University.

Laçin Şimşek, C. (2004). Ethical and aesthetic values in environmental education according to science curriculum and textbooks. *Journal of Values Education, 2*(7), 127-146. https://dergipark.org.tr/en/pub/ded/issue/36881/312464

Lapsley, D. K., & Narvaez, D. (2004). A social-cognitive approach to the moral personality. In Moral development, self, and identity (pp. 189–212). Erlbaum.

Meço, G. & Coştu, F. (2023). Investigation of physics textbooks in terms of values education. *Asya Studies-Academic Social Studies, 7*(24), 97-108. https://doi.org/10.31455/asya.1251341

MoNE (2005). *Primary science and technology course 4th and 5th grades curriculum*. Ankara: Ministry of National Education.

MoNE (2013). *Primary school science curriculum for grades 3, 4, 5, 6, 7 and 8*. Ankara: Ministry of National Education.

MoNE (2017). *Science curriculum (Primary and secondary school grades 3, 4, 5, 6, 7 and 8)*. Ankara: Ministry of National Education.

MoNE (2018). *Science curriculum (Primary and secondary school grades 3, 4, 5, 6, 7 and 8)*. Ankara: Ministry of National Education.

MoNE (2022). *Değerler eğitimi öğretim programlarında yer alan kök değerler temalı etkinlik kitabı*. https://ogmmateryal.eba.gov.tr/kitap/degerler-egitimi/Degerler-Egitimi.pdf

MoNE (2023). *Değerler eğitimi: Öğretim programlarında yer alan kök değerler temalı etkinlik kitabı*. https://ogmmateryal.eba.gov.tr/kitap/degerler-egitimi-aile-ve-toplum/degerler-egitimi-aile-ve-toplum.pdf

Özkaya, F. & Duru, A. (2020). Examination of the status of inclusion of values within the scope of values education in middle school mathematics textbooks. *Usak University Journal of Educational Research, 6*(3), 43-67. https://doi.org/10.29065/usakead.798421

Öztürk, T. & Özkan, Z. S. (2018). Investigation of texts and images in life science textbooks in terms of values. *Journal of Qualitative Research in Education, 6*(1),172-204. https://doi.org/10.14689/issn.2148-2624.1.6c1s8m

Özyuva, D. & Yamaç, A. (2022). Examination of the texts in the 6th grade English textbooks in terms of values. *Erciyes Journal of Education, 6*(2), 145-165. https://doi.org/10.32433/eje.1041663

Piaget, J. (1965). *The moral judgment of the child*. Free Press.

Pilav, S. & Orhan, M. (2020). An investigation of 6 - 12 age group TÜBİTAK children's books in terms of values education. *Manisa Celal Bayar University Journal of Social Sciences, 18*(3), 434-453. https://doi.org/10.18026/cbayarsos.759891

Polat, H. (2021). *Science teacher candidates' views about being taught the value of patriotism in science lesson* [Unpublished master thesis]. Süleyman Demirel University.

Şahin, T. & Ersoy, F. (2012). Examination of social studies textbooks in terms of approaches of values education. *Educational Sciences: Theory & Practice, 12*(2), 1547-1558. https://files.eric.ed.gov/fulltext/EJ987860.pdf

Sarah, S., Prasetyo, Z. K., & Wilujeng, I. (2018). Integration of living values into physics learning based on local potentials. Journal of Physics: Conference Series, 1022(1), 012026. IOP Publishing. https://doi.org/10.1088/1742-6596/1022/1/012026

Schreier, M. (2012). *Qualitative content analysis in practice*. SAGE. https://www.researchgate.net/publication/264788205_Qualitative_Content_Analysis_in_Practice

Selçuk, D. (2019). *Cultural and universal values in German language teaching coursebooks for secondary schools* [Unpublished master thesis]. Gazi University.

Şentürk, D. Ü. (2008). Current risks to the family instution. *Journal of Social Policy Studies, 14*(14), 7-32. https://dergipark.org.tr/tr/pub/spcd/issue/21109/227344

Şentürk, G. (2020). Teachers' views on the applicability of value education in science course. [Unpublished master thesis]. Yildiz Technical University.

Silfianah, I., Rahayu, M., & Saputra, B. (2021). Implementation of Value Education in Chemistry as an Effort to Develop Character. *Jurnal Pendidikan dan Pembelajaran Kimia, 10*(2), 113-124. https://doi.org/10.23960/jppk.v10.i2.2021.09

Sjöström, J., Eilks, I. (2018). Reconsidering different visions of scientific literacy and science education based on the concept of bildung. In: Dori, Y.J., Mevarech, Z.R., & Baker, D.R. (Eds.) *Cognition, metacognition, and culture in STEM education*. Innovations *in Science Education and Technology*, Springer, Cham. https://doi.org/10.1007/978-3-319-66659-4_4

Susar Kırmızı, F. (2014). Values in 4th grade Turkish textbook texts. *Journal of Values Education, 12*(27), 217-259. https://dergipark.org.tr/tr/pub/ded/issue/29172/312398

Tekbıyık, A. & Çakmakcı, G. (2018). *Science teaching and STEM activities*. Nobel.

Tokmak, A. & Aktaş, V. (2022). Examining textbook images on values education: Social studies lesson 5th grade example. *International Journal of Textbooks and Education Materials, 5*(2), 70-90. https://doi.org/10.53046/ijotem.1167595

Topal, Y. (2019). Values education and ten root value. *Mavi Atlas, 7*(1), 245-254. https://doi.org/10.18795/gumusmaviatlas.543521

Toraman, K. D., & Memişoğlu, H. (2022). Investigation of literary products and visuals in Social Studies textbooks in terms of values education. *International Journal of Social Sciences and Education Research, 8*(2), 198-217. https://doi.org/10.24289/ijsser.1081371

Turhal, E., & Varış, Y. (2022). A bibliometric analysis of the studies made on music and values education in Turkey. *Online Journal of Music Sciences, 7*(2), 264-283. https://doi.org/10.31811/ojomus.1203790

Turkish Language Association [TLA]. (2022). *Türk dil kurumu çerim içi sözlük*. http://www.tdk.gov.tr/index

Yaman, E. (2012). *Değerler eğitimi ve eğitimde yeni ufuklar*. Akçağ Yayınları.

Yaman, H. (2019). *The effect of student-based activities prepared within science course on responsibility value gaining* [Unpublished master thesis]. Eskişehir Osmangazi University.

Yıldırım, A. & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri*. Seçkin.

Yıldırım, A. (2007). Applying a chosen course book evaluation criterion to high school 2. grade physics course book [Unpublished master thesis]. Selcuk University.

Yıldırım, K. (2009). Values education experiences of Turkish class teachers: A phenomonological approach. *Eurasian Journal of Educational Research, 35,* 165-184.

Yılmaz, E. & Kıran, D. (2023). Examination of middle school science coursebooks in terms of values education. *Cumhuriyet International Journal of Education, 12*(1), 29-45. https://doi.org/10.30703/cije.1117516

Yılmaz, Z. & Yıldırım, H. İ. (2023). A research on the analysis of science textbooks in terms of values. *The Journal of Turkish Educational Sciences, 21*(2), 933-958. https://doi.org/10.37217/tebd.1267044

Yorulmaz, B., (2017). *Values education in the family*. Erkam.

Geniş Özet

Problem Durumu

Eğitim faaliyetleri sırasında çok sayıda materyal kullanılır ve ders kitapları da bu temel kaynaklardan biridir. Ders kitapları, müfredatın hedeflerini ve içeriğini kapsar ve öğrencilerin yeterlilik düzeylerine göre uyarlanmış bilgiler sunar. Müfredatı yansıttıkları ve hem öğrenciler hem de öğretmenler için kolay erişilebilirlik sağladıkları için eğitimde çok önemli bir rol oynarlar. Aslında, ders kitapları, özellikle mevcut pandemi döneminde, internete erişimde zorluk yaşayanlar için bile öğrencilerin hazır bulunduğu tek materyaller olabilir. Ders kitaplarının amaçlarından biri, öğrencilerin öğretim programında belirtilen değerleri ve hedef davranışları kazanmalarını kolaylaştırmaktır. Özellikle değer eğitimi söz konusu olduğunda, ders kitapları önemli bir kaynak işlevi görmektedir. Bu nedenle ders kitaplarının içeriği büyük bir önem taşımaktadır. Ders kitaplarında yer alan etkinliklerin müfredatta belirtilen değerlerle uyumlu olması, değer eğitimi açısından olumlu sonuçlar doğurur. Öğrenci ve öğretmenlerin kolaylıkla ulaşabileceği ders kitaplarında bu tür etkinliklere yer verilmesi, öğrencilerin öğretim programında yer alan değerleri içselleştirmesinde oldukça etkili olmaktadır.

İlgili literatürde (hem ulusal hem de uluslararası) ilkokul, ortaokul ve lise düzeyinde çok sayıda ders kitabının incelendiği, ancak okul öncesi düzeyde değerler eğitimi bağlamında çok az sayıda kitabın analiz edildiği görülmüştür. Tüm eğitim kademelerindeki ders kitapları arasında değerler eğitimi bağlamında en çok incelenen disiplin "Türkçe" dersi olurken, bunu "Sosyal

Bilgiler" dersi takip etmiştir. Bu iki disipline ek olarak, "İngilizce", "Hayat Bilgisi", "Müzik", "Coğrafya", "Almanca" gibi diğer derslerde de ders kitapları incelenmiştir. Bu disiplinlerle karşılaştırıldığında, değerler eğitimi bağlamında incelenen fen bilimleri alanında nispeten az sayıda ders kitabı olduğu söylenebilir. Sayıları görece az olsa da yapılan çalışmalar incelendiğinde, araştırmacıların ders kitaplarında değerleri eğitimi incelerken genellikle ders kitaplarındaki metinlere ve görsellere odaklandıkları, fen bilimleri ders kitaplarındaki okuma parçalarına (ya da metinlere) dikkat etmedikleri görülmektedir. Millî Eğitim Bakanlığı'nın fen bilimleri dersi kapsamında her konu/kavram için benimsediği kök değerlerin sunulmasının zorluğu göz önünde bulundurulduğunda, okuma parçalarının (ya da okuma metinlerinin) değerlerin öğretilmesinde önemli bir rol oynayabileceği görüşüne varılmıştır. Bu perspektiften bakıldığında, bu çalışmanın temel amacı ortaokul fen bilimleri ders kitaplarındaki okuma metinlerinde sunulan değerleri analiz etmektir. Ayrıca, bu değerlerin ders kitaplarının farklı sınıf düzeylerine ve öğrenme alanlarına göre dağılımını araştırmaktır.

Yöntem

Bu çalışmada, nitel bir araştırma yöntemi olan doküman analizi kullanılmıştır. Bu yöntemde, incelenen olgular hakkında bilgi içeren yazılı kaynaklar analiz edilerek araştırma sonuçlarına ulaşılır (Schreier, 2012). Çalışmanın odak noktası ders kitaplarıdır. Bu ders kitapları, 2018 yılında uygulamaya konulan "Fen Bilimleri Dersi Öğretim Programı" (MEB, 2018) temel alınarak hazırlanmıştır. Her sınıf düzeyinden (5, 6, 7 ve 8. sınıflar) birer tane olmak üzere toplam dört farklı ders kitabı incelenmiştir. Bu araştırma için söz konusu ders kitapları, TTKB (2017) tarafından onaylanan on kök değer odağında sistematik olarak analiz edilmiştir. Ortaokul düzeyindeki fen bilimleri ders kitaplarının analizinde betimsel içerik analizi yöntemi kullanılmıştır. Ders kitaplarının ve okuma metinlerinin içerik analizi, yazar ve 15 yıllık uzmanlığa sahip bir fen bilimleri öğretmeni tarafından ortaklaşa yürütülmüştür. Araştırmacı ve fen bilimleri öğretmeni tarafından yapılan sınıflandırmalar, fen bilimleri eğitimi uzmanı tarafından sağlanan sınıflandırmalarla karşılaştırılmış ve %98 oranında anlamlı bir uyum bulunmuştur.

Bulgular

Çalışma sonunda, 5. sınıf fen bilgisi ders kitabında ağırlıklı olarak sorumluluk değeri (f=19) vurgulanmaktadır. Bunu takiben yardımseverlik (f=14), saygı (f=10) ve arkadaşlık (f=9) değerlerine de önemli ölçüde yer verilmektedir. Sevgi (f=7), sabır (f=6), özdenetim (f=6) ve dürüstlük (f=2) gibi değerler nispeten daha az yaygındır. Ayrıca, adalet (f=1) değeri ise sınırlı bir şekilde ele alınmıştır. 6. sınıf fen bilgisi ders kitabında en çok sorumluluk değerine (f=20) vurgu yapılmaktadır. Bunu arkadaşlık (f=10) ve yardımseverlik (f=10) değerleri takip etmektedir. Daha sonra özdenetim (f=9), saygı (f=9), vatanseverlik (f=8) ve sevgi (f=7) değerleri yer almaktadır. Ancak sabır (f=3) değerine diğerlerine kıyasla daha az önem verilirken, adalet (f=0) ve dürüstlük (f=0) değerlerine ise hiç yer verilmemiştir. 7. sınıf fen bilimleri ders kitabında en fazla sorumluluk (f=10) değerine yer verilmektedir. Bunu yardımseverlik (f=8), vatanseverlik (f=4), arkadaşlık (f=4), özdenetim (f=3), sabır (f=2), sevgi (f=2), dürüstlük (f=2) ve saygı (f=1) izlemektedir. Ancak adalet değerine hiç yer verilmemiştir. Son olarak, 8. sınıf ders kitabında ise en fazla sorumluluk (f=12) değerine vurgu yapıldığı tespit edilmiştir. Özdenetim (f=9), yardımseverlik (f=9), arkadaşlık (f=6), vatanseverlik (f=6), dürüstlük (f=5), sevgi (f=5), sabır (f=4) ve saygı (f=4) değerleri daha az vurgulanmıştır. Adalet (f=2) değeri ise sadece iki kez vurgulanmıştır.

Özetle, 5, 6, 7 ve 8. sınıf düzeylerinde en yaygın vurgulanan değer sorumluluk (f=57) olmuştur. Bunu takiben yardımseverlik (f=39), arkadaşlık (f=28), özdenetim (f=25), vatanseverlik

(f=22), saygı (f=21), sevgi (f=20), sabır (f=12) ve dürüstlük (f=9) gelmektedir. Adalet (f=3) ise sadece üç kez ifade edilmiştir. Ayrıca, kök değerlerin öğrenme alanlarına göre dağılımına baktığımızda, 5. sınıf düzeyinde canlılar ve yaşam (f=23) en yüksek frekansta iken, bunu fiziksel olaylar (f=21), dünya ve evren (f=11) ve madde ve doğası (f=6) takip etmektedir. 6. sınıf düzeyinde öğrenme alanlarına göre değerlerin sıklığı şu şekildedir: canlılar ve yaşam (f=51), fiziksel olaylar (f=15), madde ve doğası (f=9) ve dünya ve evren (f=7). 7. sınıf düzeyinde öğrenme alanlarına göre değerlerin sıklığı ise şöyledir: fiziksel olaylar (f=13), madde ve doğa (f=10), canlılar ve yaşam (f=8) ve dünya ve evren (f=4). Son olarak, 8. sınıf düzeyinde canlılar ve yaşam (f=33) daha yüksek bir frekansta iken, bunu madde ve doğa (f=11), fiziksel olaylar (f=11) ve dünya ve evren (f=3) takip etmiştir. Tüm seviyelerdeki metinlerin analizi, değerlerin en çok vurgulandığı öğrenme alanının canlılar ve yaşam (f=115) olduğunu göstermektedir. Bunu fiziksel olaylar (f=60), madde ve doğası (f=36) ve dünya ve evren (f=25) izlemektedir.

Tartışma ve Sonuç

Çalışmanın sonucunda, "adalet" değerinin tüm seviyelerdeki fen ders kitaplarının okuma parçalarında en az vurgulanan ya da hiç değinilmeyen temel değerlerden biri olduğu görülmüştür. Bu bulgu, fen ders kitaplarıyla ilgili önceki araştırmalarla uyumludur. Araştırmadan elde edilen bir diğer bulguya göre ise "vatanseverlik," "sorumluluk," ve "özdenetim" fen ders kitaplarının okuma parçalarında en sık rastlanan kök değerlerdir. Fen ders kitaplarında "sorumluluk" ve "özdenetim" değerlerine daha fazla yer verilmesi, fen dersinin doğası gereği beklenen bir durumdur. Fen müfredatı çeşitli üniteler boyunca öğrencilere sıklıkla sağlık, çevre ve doğa ile ilgili konulara maruz bırakır, bu da doğal olarak hangi eylemlerin yapılması ya da kaçınılması gerektiğine dair tartışmaları içerir. Sonuç olarak, "özdenetim" ve "sorumluluk" gibi kök değerlerin okuma parçalarına (veya metinlere) sorunsuz bir şekilde entegre edilmesi ve böylece değerler eğitiminin geliştirilmesi anlaşılabilir bir durumdur.

Öte yandan, son yıllarda çeşitli alanlarda ve disiplinlerde öğrencilere aktif olarak kazandırılmaya çalışılan bir değer olan "vatanseverlik" kök değerinin öne çıkması ilgili literatürde yaygın olarak tartışılmamaktadır. Tüm seviyelerdeki fen bilgisi ders kitaplarında yer alan okuma metinleri öğrenme alanları açısından incelendiğinde, kök değerlere en fazla vurgunun "canlılar ve hayat" konu alanında yapıldığı görülmüştür. Bu bulgu beklentilerle uyumludur çünkü bu konu alanı bilim ve günlük yaşamın kesişimini kapsamlı bir şekilde incelemekte ve kök değerlerin öğrencilere aktarılmasını kolaylaştırmaktadır. Benzer sonuçlar, "Sosyal Bilimler" ve "Din Kültürü ve Ahlak Bilgisi" gibi kurallar ve yaşam tarzlarının kapsamlı bir şekilde ele alındığı diğer derslerde de elde edilmiştir.