

Research Article



An Examination of 9th-12th Grade Textbooks Within the Scope of the 2018 Secondary Education Biology Curriculum in the Context of Values Education: A Document Analysis

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Abstract

This study presents an analysis of the 2018 Secondary Education Biology Curriculum in Turkey in terms of values education for grades 9-12. The research examines the expressions of values within the curriculum and their distribution in biology education. According to the analysis results, the values emphasized most in the curriculum are patriotism, respect, and responsibility. On the other hand, values such as justice, honesty, patience, altruism, and self-discipline are not adequately represented, and the value of love is particularly absent in the 10th and 11th-grade curriculum. Based on these findings, the research suggests that the curriculum should be updated with a more balanced and inclusive perspective on values education. This study aims to provide new perspectives on how values education can be integrated into scientific learning processes.

Keywords: Values education, biology curriculum, secondary education, pedagogical analysis

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Introduction

Understanding the developmental characteristics of individuals being educated is fundamental for the application of correct and effective pedagogical methods. The capacity for children to perceive and internalize various topics, and the methods through which these perceptions occur, significantly differ across developmental stages. Acquiring a foundational sense of trust during early childhood is deemed crucial for emotional and social development in later years (Hökelekli, 2010), while the middle childhood period, spanning ages 10-12, represents an optimal phase for instilling core values. This period, characterized by the onset of abstract thinking abilities, sees children becoming increasingly keen to engage in discussions and articulate their ideas (Çağlayan, 2013). Adolescence, a stage often marked by behavioral and psychological challenges, necessitates an educational approach that prioritizes listening, respect, and the non-imposition of values, particularly within the context of values education (Koç, 2004).

The debate over incorporating values that guide children to discern right from wrong and comprehend the essence of good versus evil into educational frameworks has persisted throughout history. Despite occasional exclusions of values education from formal curricula, the notion that knowledge acquisition can be detached from values in inherently social beings is untenable (Yazar & Lala, 2020). Furthermore, the significance of a conducive educational environment cannot be overstated. The transition from learning in familial settings to formal education in schools not only facilitates academic and vocational development but also plays a pivotal role in personal growth, citizenship education, and the inculcation of moral values (Ekşi & Katılmış, 2020). Consequently, the choice of educational institutions by parents has increasingly begun to factor in the quality of values education, highlighting the importance of a nurturing and expressive school environment (Elbir & Bağcı, 2013).

Textbooks emerge as crucial pedagogical tools within the educational process, serving as guides and resources for both educators and students. An effective textbook, characterized by accuracy and harmony in its textual, visual, and content aspects, plays a significant role in the systematic transmission of curricula and pedagogical objectives (Irez, 2009; Sözcün, 2018). Recent trends have underscored the integration of values education into curricula, with textbooks beginning to reflect this shift. Such educational materials not only facilitate the structured impartation of knowledge but also serve as mediums for the transmission of societal values, thereby influencing students' behavioral development and reflection in daily life (Atıcı, Samancı & Özel, 2007).

In conclusion, textbooks devoid of social values and moral elements, while informative, fall short in facilitating the cultural advancement and enrichment of individuals (Karic, 2016). The sustainability of societies hinges on various factors, among which the intergenerational transmission of cultural and moral values plays a critical role. As such, the true essence and identity of a society risk obsolescence if its culture and values fail to be effectively transmitted

to future generations. This investigation aims to elucidate how the absence of social values and moral elements in education impairs the cultural advancement and enrichment of individuals, thereby advocating for a holistic educational approach that transcends mere knowledge transfer.

The Aim, Significance, and Originality of the Study

The primary aim of this investigation is to critically examine the representation of social values and moral elements within the 9th-12th grade Biology textbooks under the 2018 Secondary Education Biology Curriculum in Turkey. This study seeks not only to identify the explicit and implicit values conveyed through these educational materials but also to assess their alignment with the broader objectives of values education as stipulated by the Turkish Ministry of National Education (MoNE).

The significance of this research lies in its potential to illuminate the current state of values education within the context of secondary biology education, providing a nuanced understanding of how values are integrated into the curriculum and the extent to which these efforts contribute to the holistic development of students. By shedding light on the variances in value representation across different grade levels, this study underscores the importance of a balanced and inclusive approach to values education, one that fosters moral and ethical development alongside scientific literacy.

The originality of this study stems from its comprehensive analysis of values education within biology textbooks, a relatively underexplored area in the existing body of educational research in Turkey. Moreover, by employing a document analysis methodology, this research offers insights into the implicit and explicit mechanisms of value transmission in educational settings, contributing to the ongoing discourse on the role of education in cultivating socially responsible and ethically grounded individuals. This investigation, therefore, not only contributes to the academic field of values education but also provides practical implications for curriculum developers, educators, and policymakers aiming to enhance the moral and ethical dimensions of secondary education in Turkey.

In conclusion, this study endeavors to bridge the gap between the theoretical aspirations of values education and its practical implementation within biology textbooks, advocating for an educational paradigm that equally prioritizes moral, ethical, and scientific learning. Through this holistic approach, the research aims to contribute to the cultivation of well-rounded individuals equipped to navigate the complexities of contemporary society with integrity and social responsibility.

Method

Research Methodology

This research was designed as a qualitative study, utilizing the document analysis method to explore the incorporation of values education in the 9-12 grade Biology textbooks approved by the Turkish Ministry of National Education (MoNE). Document analysis, as outlined by Bowen (2009), involves a systematic evaluation of educational materials to uncover themes, patterns, and meanings. This approach is particularly well-suited to examining the explicit and implicit content within educational texts, allowing for a comprehensive understanding of how values are conveyed and contextualized.

Study Documents

The core materials for this study were the officially sanctioned Biology textbooks for grades 9 through 12. These textbooks are pivotal in shaping the curriculum and are reflective of the educational standards and pedagogical approaches endorsed by the MEB. Given their widespread use and impact on the student body, these textbooks provide a rich source of data for analyzing the integration of values education within the Turkish secondary biology curriculum.

Data Collection

Data collection was undertaken through a meticulous examination of each textbook, focusing on text, images, and supplementary materials such as learning activities (e.g., research questions, presentations), additional reading sections, and visual content (e.g., graphics, infographics, photographs, schemata). The intent was to identify and catalog instances where values education was either directly taught or implicitly included through the presentation of biological concepts. Each textbook was reviewed multiple times to ensure a thorough extraction of relevant data, adhering to the methodological guidelines suggested by Merriam (2009).

Data Analysis

The data analysis was conducted through a rigorous content analysis process, in line with Hsieh and Shannon (2005), which allows for the identification of specific themes and patterns within qualitative data. This analysis focused on discerning how values education was integrated into the biology curriculum, the types of values emphasized, and the categorization of these values into coherent themes reflective of the curriculum's educational objectives.

Ethical Considerations

Ethical considerations were strictly adhered to throughout the research process. Given that this study involved the analysis of publicly available educational materials, no ethical approval was necessary. However, the study maintained a high standard of academic integrity

and rigor, ensuring that all analyses and interpretations were conducted objectively and respectfully, in alignment with academic research ethics.

Results

Examination of 9th Grade High School Biology Textbooks from a Value Perspective

The 9th-grade Biology textbook, which spans 184 pages, is divided into three main units: "Life Science Biology," "Cell," and "The World of Living Beings." These units feature a variety of sections, including "Did You Know?", "Activity-Experiment", "Reading Passage", "Unit End Assessment," and "Glossary." A notable inclusion in the introduction is a segment titled "Safety and Health Warnings." Our investigation centered on whether these sections effectively incorporated specific value expressions or texts that align with such values, adhering to a document analysis methodology as described in seminal qualitative research literature (Bowen, 2009; Prior, 2003).

Value Expressions in Text

Upon analyzing the textbook, we identified a total of 11 distinct value expressions, encompassing "respect" (1 instance), "love" (3 instances), "responsibility" (4 instances), and "helpfulness" (2 instances). Specifically, the "Safety and Health Warnings" segment of the textbook's introduction contained mentions of "love" (1 instance) and "responsibility" (2 instances), underscoring the textbook's commitment to embedding values within educational content. For example, a statement advocating for the "importance of mutual respect to foster a conducive learning environment" encapsulates the textbook's approach to instilling respect. Similarly, an excerpt stating, "Caring for laboratory animals teaches us compassion and responsibility towards all living beings," illustrates how the textbook integrates the value of love through practical examples.

Detailed Unit Analysis

- **Life Science Biology:** This unit explores the characteristics of living organisms and the molecules they are made of. An introductory statement on page 13 explicitly addresses the sub-dimension of "love for nature," highlighting the intrinsic human tendency to feel affection towards all living beings, which is a foundational aspect of biology education (Dillon & Grace, 2013). For instance, "Our connection with nature is not just biological. It is emotional and spiritual, teaching us the value of love and respect for the environment."
- **Cell:** The second unit did not contain texts directly related to the predefined value themes, indicating an area for potential enhancement in value-based education within scientific subjects (Eilks & Byers, 2010).

- The World of Living Beings: This unit delves into the classification and characteristics of different living organisms. Within this unit, references to respect and love for nature are evident, reflecting an emphasis on environmental education within science curricula (Dillon & Grace, 2013). For example, "Understanding the diversity of life forms around us deepens our respect for nature and its intricate balance."

Examination of 10th Grade High School Biology Textbooks from a Value Perspective

The analysis extended to the 10th-grade Biology textbook, comprising 240 pages and including units on "Cell Divisions," "General Principles of Inheritance," and "Ecosystems and Current Environmental Issues." Our examination sought to identify value expressions across various sections, adhering to rigorous content analysis guidelines (Merriam, 2009; Bowen, 2009).

Value Expressions in Text

The textbook exhibited a diverse array of value expressions: helpfulness (2 instances), friendship (5 instances), respect (9 instances), responsibility (4 instances), patriotism (9 instances), justice (1 instance), honesty (2 instances), self-control (2 instances), and patience (1 instance). Notably, the "Safety Measures" section did not contain related value expressions, presenting an opportunity for incorporating values into all aspects of the textbook. Detailed excerpts from the textbook include statements such as "Working together in laboratory activities not only builds scientific knowledge but also fosters friendship and teamwork among students," demonstrating the textbook's approach to blending scientific education with value education.

Unit Analysis

The first unit, "Cell Divisions," discusses the necessity of cell division in living organisms, mitosis, asexual reproduction, and certain asexually reproducing organisms. A reading passage in this unit titled "The Power of Love" on page 35 points to the sub-dimension of "compassion towards the environment" under the value of helpfulness. Another passage on the same page indicates the sub-dimension of "supporting friends" under the value of friendship.

In the second unit, "General Principles of Inheritance," which explains how genes are transmitted from generation to generation and their interaction with each other and the environment, there were no texts containing the identified value expressions.

The third unit, "Ecosystem Ecology and Environmental Issues," covers the relationship between living and non-living things in ecosystems, modes of nutrition in organisms, and analyses the flow of matter and energy in ecosystems to explain matter cycles and the sustainability of life. At the end of the first section of this unit, on page 164, the "News Corner" titled "Green Buildings Consuming Carbon Dioxide" contains expressions that align with the values of responsibility and patriotism. Additionally, a discussion on "Global Climate Change"

on page 176 includes expressions related to respect, emphasizing the equal rights of all living beings to life and the importance of respectful and fair treatment of nature.

In-depth Unit Analysis

- **Cell Divisions:** This unit outlines the critical role of cell division in living organisms and includes passages that emphasize compassion towards the environment and the importance of friendship and cooperation in scientific inquiry.
- **Ecosystem Ecology and Environmental Issues:** This unit covers interactions between living and non-living things in ecosystems, with texts highlighting the significance of responsibility, respect, and patriotism towards preserving our natural world. For instance, a discussion on “Global Climate Change” underscores the necessity of respectful and fair treatment of nature, advocating for collective responsibility in combating environmental challenges.

In summary, the 10th-grade biology textbook encompasses various value expressions distributed across its units. The evaluation forms at the end of the unit also contain items that align with values such as friendship, honesty, and respect, highlighting the role of biology education in fostering values among students, as suggested in the literature on values education in science (Eilks & Byers, 2010; Zeidler & Nichols, 2009).

Examination of 11th Grade High School Biology Textbooks from a Value Perspective

As part of the assessment of value representation in high school biology textbooks, the 11th-grade textbook was thoroughly examined. This book, published by the Turkish Ministry of National Education is analyzed with particular attention to the predefined values. The 11th-grade biology textbook comprises two main units: "Human Physiology," consisting of seven chapters, and "Community and Population Ecology," divided into two chapters. Similar to other textbooks, this one also includes a “Safety Signs” section in the introduction. Within the units, sub-sections such as “Chapter Preparation Text,” “Reading Passage,” “Read, Evaluate,” and “Being Informed” are present. The study focused on whether these sections contained expressions of predefined values or texts corresponding to these expressions.

In the 11th-grade biology textbook, texts embodying expressions of various values were identified: Responsibility (8 instances), patriotism (4 instances), self-control (2 instances), respect (2 instances), and one instance each of friendship and helpfulness. The textbook, consisting of a total of 252 pages, does not include any expressions of the identified values in the “Safety Signs” section of the introduction. The first unit, “Human Physiology,” features texts with expressions of responsibility (4 instances), patriotism (3 instances), respect (1 instance), self-control (1 instance), and helpfulness (1 instance). The second unit, “Community and Population Ecology,” contains texts related to friendship (1 instance), self-control (1 instance), respect (1 instance), responsibility (1 instance), and patriotism (1 instance).

The 11th-grade Biology textbook was explored with a focus on "Human Physiology" and "Community and Population Ecology." The analysis revealed a comprehensive integration of values, particularly responsibility and patriotism, across the units. The "Human Physiology" unit, for instance, addressed the value of responsibility towards one's country and the importance of productive contributions to society. The "Community and Population Ecology" unit emphasized themes of cooperation and sustainable agricultural practices, resonating with the values of friendship, self-control, and patriotism.

Examination of 12th Grade High School Biology Textbooks from a Value Perspective

The 12th-grade Biology textbook, divided into units covering genetics, organismal energy transformations, plant biology, and ecological relationships, presents an opportunity to weave values education throughout advanced biological concepts. Similar to the 11th-grade textbook, this analysis highlights the integration of values such as patience, self-control, love, friendship, respect, responsibility, and patriotism, with notable applications in discussions ranging from genetic research to environmental conservation and societal contributions.

The 12th-grade biology textbook, comprising 224 pages, is divided into four main units. The first unit, "From Gene to Protein," consists of two chapters. The second unit, "Energy Transformations in Organisms," has four chapters. The third unit, "Plant Biology," is made up of three chapters, and the final unit, "Organisms and Environment," includes two chapters. A section titled "Safety Symbols" precedes the units. Each unit opens with introductory content, including "extra information," "research" boxes, "activities," and "reading passages." The analysis also encompassed the "Safety Symbols" section.

This comprehensive review of the 12th-grade biology textbook, including the detailed value expressions revealed texts with instances of patriotism (4), responsibility (2), respect (2), and one each for patience, self-control, love, and friendship. Notably, the "Safety Symbols" section did not contain any value expressions.

Unit Analysis

The first unit "From Gene to Protein" delves into the discovery and importance of nucleic acids and technological advancements in genetics. A reading passage on page 36 highlights the value of patience, particularly the aspect of persistence, showcasing the importance of this trait in scientific endeavors: "Prof. Dr. Aziz Sancar's life journey, replete with challenges, exemplifies the values necessary for a scientist, including patience, determination, and hard work. His trajectory from Mardin to receiving the Nobel Prize exemplifies a remarkable success story." (p.36) Another text in the same passage illustrates patriotism, emphasizing productivity: "I would unequivocally refuse ten million dollars for my discovery. The discovery brings an irreplaceable inner peace, and it's gratifying that future Turkish scientists will see this as an achievement by one of their own." (p.36)

In the second unit “Energy Transformations in Organisms”, the text on page 45 under the “Human Genome and Diseases” section reflects self-control and friendship values: “Combating obesity requires individuals to control their eating behaviors and assume responsibility for these actions. Support from family and friends is crucial in persevering through the treatment process.”

In the third unit “Plant Biology” a text on page 129 associated with the value of love, specifically the appreciation of nature, reads: “The scent of orange blossoms in the streets invites one to immerse themselves in nature’s beauty, signifying nature’s positive energy impact on humans.” On page 131, respect for human relationships is highlighted: “Thousands of plant species across our country contribute to a variety of dishes, often shared with neighbors, fostering community bonds.”

The fourth/final unit “Organisms and Environment”’s text on page 208 emphasizes patriotism and responsibility: “Our current peaceful existence in this beautiful country, our ability to live without fear, is a testament to the unsung heroes of the past. Recognizing these sacrifices is crucial for appreciating our present liberties.”

Discussion, Result and Recommendations

The analysis of high school biology textbooks across grades 9 through 12 has highlighted significant variances in the representation of moral and ethical values. The dominant presence of values such as patriotism, respect, and responsibility, while crucial, overshadows other equally important values like justice, honesty, patience, helpfulness, and self-control. This disproportionate emphasis raises concerns about the comprehensiveness of values education within the biological sciences curriculum. Additionally, the observed inconsistency in the representation of these values across different grade levels, particularly the notable absence of the value of love in the 10th and 11th-grade textbooks, suggests a lack of uniformity in the educational approach.

The analysis of the high school biology textbooks across grades 9, 10, 11, and 12 reveals a total of 74 value expressions. Of these, the most frequently encountered theme was patriotism, with a total of 19 expressions or texts related to this value across all the textbooks. This prominence of patriotism is followed by respect with 14 mentions and responsibility with 11 mentions. Interestingly, the least discussed value in these biology textbooks is justice, which is mentioned only once and exclusively in the 10th-grade textbook. Other values like honesty (2 mentions), patience (3), helpfulness (4), and self-control (4) are also less frequently addressed.

When examining the textbooks of each grade separately, it becomes apparent that the 10th-grade biology textbook stands out in terms of value education. This textbook alone accounts for 34 references to the assessed values and includes mentions of almost all the values except for love. Notably, texts or expressions related to the value of love are absent in both the 10th

and 11th-grade textbooks. The 9th-grade biology textbook contains the fewest value expressions, with only 10 mentions related to values. The 12th-grade textbook follows with 11 value expressions. However, the values of respect, responsibility, and patriotism are consistently present across the textbooks of all grade levels. This analysis underscores the varying emphasis on different values in biology education across grade levels, highlighting the dominant themes of patriotism, respect, and responsibility, and pinpointing areas where certain values like justice, honesty, patience, helpfulness, and self-control receive less attention.

The comprehensive analysis of high school biology textbooks across grades 9 through 12 illuminates the nuanced portrayal of moral and ethical values within the biological sciences curriculum. This examination revealed a significant emphasis on values such as patriotism, respect, and responsibility. This focus, while critical to fostering a sense of national identity and ethical responsibility, risks marginalizing other vital values like justice, honesty, patience, helpfulness, and self-control. Such an imbalance prompts a critical reflection on the breadth and depth of values education integrated into the biology curriculum.

Interestingly, the analysis uncovered a total of 74 value expressions, with patriotism being the most prevalent. This finding aligns with Thornberg's (2008) assertion regarding the often uneven representation of values in educational materials, where certain values, deemed more aligned with societal or national objectives, may overshadow others. The scarcity of references to values such as justice, highlighted by its solitary mention across all textbooks, underscores a potential gap in addressing comprehensive ethical education. This gap might limit students' ability to engage with diverse ethical dilemmas critically and empathetically, a concern echoed by Halstead and Taylor (1995) in their exploration of values in education.

The notable absence of the value of love, particularly in the 10th and 11th-grade textbooks, suggests a missed opportunity to cultivate empathy and compassion among students. This omission is particularly striking given the potential of biology education to foster a deep appreciation for life and interconnectedness, themes resonant with the value of love. Drawing on the work of Poole (1995), who discusses the role of beliefs and values in science education, integrating a broader spectrum of values can enrich students' understanding and appreciation of science within a wider ethical and societal context.

The findings underscore an imperative need for a more balanced integration of diverse values in biology education. The current emphasis tends to marginalize some fundamental values, which could potentially limit the scope of ethical and moral development among students. The variance observed across different grades suggests a lack of a cohesive and systematic approach to values education within the biology curriculum. Based on these findings, the following recommendations are proposed to enhance values education within the biology curriculum:

- **Broadening the Spectrum of Values:** Curriculum designers and policymakers are encouraged to integrate a more diverse array of values into biology textbooks. This integration should strive for a balance, ensuring that values related to empathy, justice, and honesty are given equal importance alongside patriotism, respect, and responsibility. This approach aligns with the broader educational goal of developing well-rounded individuals equipped to navigate the complexities of modern society.
- **Uniformity Across Grade Levels:** A consistent and systematic inclusion of values across all grade levels is essential. Such uniformity ensures that students' understanding and appreciation of core values evolve and deepen throughout their educational journey. Consistency in values education also supports the development of a coherent ethical framework that students can apply both within and beyond the biology classroom.
- **Active Involvement of Educators:** Incorporating educators' insights into curriculum development can significantly enhance the relevance and impact of values education. Teachers, with their direct experience in classroom dynamics and student engagement, can offer valuable perspectives on effectively integrating values into educational content and pedagogy.
- **Focused Teacher Training Programs:** The development and implementation of targeted training programs for teachers in the domain of values education are crucial. Such programs should equip teachers with the knowledge and skills to effectively facilitate discussions on values, encouraging critical thinking, empathy, and ethical reasoning among students.
- **Adopting a Student-Centric Approach:** Emphasizing active student participation in learning about values can make the educational process more engaging and meaningful. Methods that encourage discussion, reflection, and real-world application of values can facilitate deeper understanding and internalization of these concepts.
- **Regular Curriculum Review and Feedback Mechanisms:** Establishing regular review processes for the biology curriculum, involving feedback from both educators and students, can ensure that the curriculum remains responsive to changing societal needs and values. This ongoing evaluation can help identify areas for improvement, ensuring that values education remains relevant and impactful.

In conclusion, this analysis and the ensuing recommendations aim to contribute to the ongoing discourse on enhancing values education within biology curricula. By fostering a more inclusive and comprehensive approach to values education, we can better prepare students to meet the ethical challenges of the future, equipped with a diverse and robust moral compass.

References

- Atıcı, T., Samancı, N. K., & Özel, Ç. A. (2007). İlköğretim fen bilgisi ders kitaplarının biyoloji konuları yönünden eleştirel olarak incelenmesi ve öğretmen görüşleri. *Türk Eğitim Bilimleri Dergisi*, 5(1), 115-133.
- Elbir, B., & Bağcı, C. (2013). Değerler eğitimi üzerine yapılmış lisansüstü düzeyindeki çalışmaların değerlendirilmesi. *Electronic Turkish Studies*, 8(1), 1321-1333.
- Bowen, G. A. (2009). Document analysis as a Qualitative research method. *Qualitative Research Journal*, 9(2), 27-40.
- Çağlayan, A. (2005). *Ahlak pusulası: Ahlak ve değerler eğitimi*. Dem yayınları.
- Dillon, J., & Grace, M. (2013). Environmental education in science education. In: N. Lederman & S. Abell (Eds.), *Handbook of Research on Science Education* (Vol II, pp. 511-528). Routledge.
- Eilks, I., & Byers, B. (2010). The need for innovative methods of teaching and learning chemistry in higher education. In: B. Byers & I. Eilks (Eds.), *Innovative methods of teaching and learning chemistry in higher education* (pp. 1-14). RSC Publishing.
- Ekşi, H., Katılmış, A. (2020). Kavramsal çerçeve: Temel kavramlar. Ekşi, H., Katılmış, A. (Ed.). *Karakter ve Değerler Eğitimi* (ss. 1-21). Nobel
- Gençtan, E. (1995). *İnsan olmak* (12. baskı). İstanbul: Remzi Kitabevi.
- Halstead, M., & Taylor, M.J. (Eds.). (1995). *Values in education and education in values*. Routledge.
- Hökelekli, H. (2010). *Din psikolojisi*. Dem
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Irez, S. (2009). Nature of science as depicted in Turkish biology textbooks. *Science Education*, 93(3), 422-447.
- Karic E. (2016). Eğitim ve ahlaki terbiye. J. Casewitt (Ed.) (çev. Nurullah Koltas). *Gelenegin ısiğında eğitim* (ss. 77-83). Edam.
- Koç, M. (2004). Gelişim psikolojisi açısından ergenlik dönemi ve genel özellikleri. *Erciyes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 1(17), 231-238.
- MEB. (2017). Ortaöğretim biyoloji dersi öğretim programı, <http://mufredat.gov.tr>
- MEB. (2018). Ortaöğretim biyoloji dersi öğretim programı, <http://mufredat.gov.tr>
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Poole, M. (1995). *Beliefs and values in science education*. McGraw-Hill Education.

- Prior, L. (2003). *Using documents in social research*. Sage Publications.
- Sözcün, Z. (2018). Genelde eğitim özelde din eğitimi verilirken gelişim dönemi özelliklerinin önemi. *Yakın Doğu Üniversitesi İslam Tetkikleri Merkezi Dergisi*, 4(1), 65-80.
- Şentürk, L., & Aktaş, E. (2015). Türkiye'de ve Romanya'da okutulan ana dili Türkçe ders kitaplarının değer iletimi açısından karşılaştırılması. *Değerler Eğitimi Dergisi*, 13(29), 215-243.
- Thornberg, R. (2008). The lack of professional knowledge in values education. *Teaching and Teacher Education*, 24(7), 1791–1798
- Yazar, T. & Lala, Ö. (2020). Değerlerin kaynakları ve temelleri. Ekşi, H., Katılmış, A. (ed). *Karakter ve Değerler Eğitimi* (ss. 27-52). Nobel
- Zeidler, D. L., & Nichols, B. H. (2009). Socioscientific issues: Theory and practice. *Journal of Elementary Science Education*, 21(2), 49-58.