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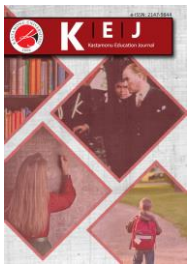

| Research Article / Araştırma Makalesi |

Investigation of 3rd Grade Life Science Textbook Texts and Activities According to Lipman's Critical Thinking Theory

3. Sınıf Hayat Bilgisi Ders Kitabında Yer Alan Metin ve Etkinliklerin Lipman'ın Eleştirel Düşünme Kuramına Göre İncelenmesi

Elif ALKAR[1], **Kemal KAYA**[2]

Keywords

1. 3rd grade Life Science textbook
2. Critical thinking
3. Matthew Lipman
4. Primary Education.

Anahtar Kelimeler

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Abstract

Aim: Individuals need to have a philosophical critical thinking skill in order to have a reasonable approach to the situations and events they will encounter throughout their lives and to benefit themselves and the society Philosophical critical thinking is a process that enhances individuals' capacity to interrogate, analyse, and assess. In this regard, an inquisitive critical approach acquired at an early age makes important contributions to personality development. The current study aims to examine the text and activity contents in the 3rd grade Life Science textbook according to Matthew Lipman's critical thinking theory.

Methodology: Methodologically, document analysis was used in the study. In the 3rd grade Life Science textbook, the main approach in the data on text contents, activity questions and statements are that the statements have both a philosophical and critical meaning. The relevant data were analyzed according to the categories in Lipman's critical thinking approach and presented in tables.

Findings: The findings revealed that the questions and statements that meet Lipman's critical thinking categories were insufficient. While the expressions among the categories were predominantly judgment formation and being criterion/measure based, the least common categories were context sensitivity and self-correction.

Highlights: In this context, it is essential to consider the developmental stages of primary education students and contemporary educational requirements, while integrating a philosophical critical thinking approach more thoroughly into the curriculum and practices to foster an active and inquisitive student personality.

Öz

Çalışmanın amacı: Bireylerin yaşamları süresince karşılaşacakları durum ve olaylara makul yaklaşım göstermeleri, kendilerine ve topluma fayda sağlayabilmeleri felsefi bir eleştirel düşünme becerisine sahip olmalarını gerektirir. Felsefi eleştirel düşünme, bireylerin sorgulama, analiz etme ve değerlendirme yeteneklerini geliştirmelerine yardımcı olan bir süreçtir. Bu konuda erken yaşlarda edinilen sorgulayıcı eleştirel yaklaşım kişilik gelişimine önemli katkılar sunmakladır. Mevcut araştırmada 3. sınıf Hayat Bilgisi ders kitabında yer alan metin ve etkinlik içeriklerinin Matthew Lipman'ın eleştirel düşünce kuramına göre incelenmesi amaçlanmaktadır.

Materyal ve Yöntem: Yöntemsel olarak çalışmada doküman incelemesi yapılmıştır. 3. sınıf Hayat Bilgisi ders kitabındaki metin içerikleri, etkinlik soruları ve ifadelerinin ele alındığı verilerdeki temel yaklaşım, ifadelerin hem felsefi hem de eleştirel bir anlam taşıması üzerinedir. İlgili veriler, Lipman'ın eleştirel düşünce yaklaşımındaki kategorilere göre içerik analizi ile çözümlenmiş ve tablolar şeklinde sunulmuştur.

Bulgular: Ulaşılan bulgularda, Lipman'ın eleştirel düşünce kategorilerini karşılayan soru ve ifadelerin yetersiz kaldığı görülmüştür. Kategoriler arasındaki ifadeler ağırlıklı olarak yargı oluşturma ve ölçüt/kritere dayalı olma iken en az bulunan kategoriler bağlama duyarlılık ve kendi kendine düzeltme şeklindedir.

Önemli Vurgular: Bu bağlamda ilköğretim düzeyindeki öğrencilerin gelişimsel dönemlerinin ve günümüzün eğitim ihtiyaçlarının göz önüne alınması, öğrencinin etkin ve sorgulayıcı bir kişilik gelişimi için felsefi eleştirel düşünce yaklaşımının öğretim programı ve uygulamalarında daha fazla yer alması gerekliliği öne çıkmaktadır.

[1] **Corresponded Author,** Van Yüzüncü Yıl University, Faculty of Education, The Department of Turkish and Social Studies, Van, TÜRKİYE; https://orcid.org/0000-0002-5048-6470
[2] Van Yüzüncü Yıl Universtiy, Faculty of Education, The Department of Turkish and Social Studies, TÜRKİYE; https://orcid.org/0000-0002-8797-5980

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INTRODUCTION

Within the framework of 21st century needs, critical thinking skills are defined as the ability of individuals to make correct evaluations against the facts and events they encounter throughout their lives. Critical thinking is intertwined with many structures such as problem solving, logic and questioning that are effective in the mental and social development of the individual (Bangert-Drowns & Bankert, 1990). The ability of individuals to make various predictions about different situations and to approach these situations with reflective skepticism is related to critical thinking skills (Brookfield, 2005). Through critical thinking, we can recognize the assumptions in our mental representations and question these assumptions. Kuhn (1999) states that critical thinking develops metacognitive understanding. With this way of thinking accompanying professional and social life, it is possible for students to be more motivated and discover deeper meanings (Foo & Quek, 2019).

Matthew Lipman is one of the important thinkers who gives special importance to critical thinking and its education. Putting forward the philosophy for children (P4C) approach, Lipman states the aims of the program as children using their minds correctly and gaining thinking skills. The approach is based on developing an understanding of critical thinking through reasoning, developing creativity and strengthening ethical understanding. According to Lipman, critical thinking is a process that involves drawing conclusions about the cognitive and intellectual skills necessary for effective definition, analysis and reasoning, and is a state in which rational decisions are made about what to believe and what to do (Lipman, 1988). Lipman distinguishes between normal thinking and critical thinking. According to him, normal thinking is simple and has no criteria, whereas critical thinking is more complex and based on objective criteria. Lipman evaluates critical thinking in terms of four categories. These are self-correction, context sensitivity, criterion-based, and judgment formation (Lipman, 2003). Lipman's theory of critical thinking categories can be defined as follows.

Lipman's Categories of Critical Thinking

***Self-correction*:** According to Lipman, critical thinking enables individuals to see their own mistakes and correct them. In a sense, the individual performs self-control, self-regulation and self-criticism. In this way, the individual has the opportunity to see and correct his/her own and the community's weaknesses and methods (Lipman, 1988).

Context sensitivity: Critical thinking is flexible thinking in the sense that it recognizes that different contexts require different applications of rules and principles. Therefore, it tries to be fair in discussion and to take into account the relevant circumstances (Lipman, 2003).

***Being based on criteria*:** According to Lipman, political, religious, social, etc. rules, conventions, traditions, etc. can be criteria (Lipman, 2003).

Judgment Formation: Lipman's judgment dimension is the result of critical thinking, and these results often appear as opinions, predictions or definite conclusions (Lipman, 2003).

One of the aims of philosophy is to give people an identity **(**Büyükdevenci, 2019). The individual finds themselves with questions such as *"why* and *why"* that they ask themselves and their environment in order to discover their own existence, and education accompanies this process **(**Kuşçu, 2023). At this stage, the individual questions their surroundings with critical thinking components such as asking questions, analyzing and comparing criteria. As a matter of fact, the educational understanding of the 21st century is based on an approach in which the student actively participates in the lesson, asks questions, and the teacher accompanies as a guide (Kaya, 2006). In this sense, the Life Science course given at the primary school level has a content that helps children understand themselves and the world (MoNE, 2009).

One of the general aims of the Life Science course is to enable students to acquire critical thinking (Bodur, 2010). Critical thinking, which is among the basic skills in this curriculum, aims to create a questioning perspective on the individual's knowledge and behavior. Within the scope of critical thinking, it is among the aims of the Ministry of National Education (MoNE) (2018) that individuals should know themselves, research and produce. Life Science textbooks also fulfill this purpose in terms of content. As a matter of fact, the 3rd grade textbook includes skills such as recognizing oneself and one's friends, questioning ideas about the consequences of possible situations and behaviors, and making comparisons between various situations (Birdoğan & Akagün, 2022). It is also stated that students meet the life skills of this curriculum outcomes mostly at the 3rd grade level (Özkan-Elgün & Uysal, 2022). As in the content of many curricula, the Life Science curriculum also includes various text contents and activity questions that make students question. In this context, the curriculum and textbooks have some questions and contents that also carry Lipman's critical thinking criteria.

Literature Review

Studies show that critical thinking is a philosophical activity, based on an inquisitive basis (Alkın-Şahin & Tunca, 2015), and that multiple-choice questions for students generally do not reflect the tendencies of critical thinking (Ku, 2009). When deciding what to believe or do, it is useful to use a range of critical thinking dispositions and abilities within certain criteria (Ennis, 1996). Critical thinking is seen as improving our thinking and presenting it in a more clear, accurate and reasoned way (Elder, 2022). Richard Paul, who considers critical thinking as a behavior that does not occur easily and spontaneously but is learned as a result of intense effort, defines the concept as "*the art of thinking about our thinking"* in order to make our thinking clearer, precise, accurate, relevant, consistent and fair. He describes the different reflection dimensions of the definition as "the art of constructive

skepticism", "the art of identifying and eliminating bias and one-sidedness of thought", "the art of self-directed, in-depth, rational learning", "the art of thinking that rationally verifies what we know and makes clear what we know about" (Paul, 1989). Critical thinking is self-directed, purposeful judgment that is evidence-based and involves interpretation, analysis, evaluation and inference (Smith-Stoner, 1999). It is stated that this way of thinking implies not only purposeful reflection but also testing the evidence and logic we and others use (Chaffee as cited in Johnson, 2002). Critical thinking, which can be developed through different teaching strategies, allows for the evaluation of decisions and the presentation of solutions through a logical and systematic review of problems (Woolfolk, 2000). Critical thinking, which is necessary in every moment of daily life, can be considered as an idea that includes logical thinking, reasoning and questioning in the process of making informed decisions (Cheek et al., 2021). On the other hand, education based on critical thinking skills positively affects students' attitudes towards using critical thinking skills (Bodur, 2010), and more effective results are achieved especially in questions specific to a certain subject (Renaud & Murray, 2008). Critical thinking is effectively applied in many different course contents. For example, English language education supported by critical thinking improves students' thinking and language skills (Bağ, 2020). For the Turkish language course, students find activities with critical thinking more fun and useful (Güzel, 2022). Within the scope of Life Science course, activities related to critical thinking skills increase students' critical thinking tendencies (Gevrek, 2023). In studies conducted in previous years, it was observed that the activities related to critical thinking skills in the Life Sciences textbooks mostly focused on inference-making and drawing conclusions (Akbay, 2017). Although the Life Science curriculum has improved in terms of basic skills over the years (Onur, 2009), critical thinking in this course is mostly tried to be met with short-answer questions (Turan, 2012). However, it is observed that students experience positive changes in skills such as recognizing the relationships between critical thinking and question-answer, interpreting questions, and reaching correct inferences by investigating the source of information (Güzel, 2022).

The current study is based on examining the place and function of philosophical thinking in education on the basis of curriculum and textbook material. For this purpose, the 3rd grade Life Science textbook was analyzed based on the theory of critical thinking in Lipman's “Philosophy for Children” theory. As a matter of fact, a systematic approach that skillfully evaluates knowledge to find the most appropriate solution to the problems encountered in daily life can be achieved through critical thinking (Thompson, 2011). In this context, it was ensured that the text and activity contents in the 3rd grade Life Science textbook were evaluated in terms of including Lipman's critical thinking components. The study research questions sought to be answered in this direction are as follows: intended to be addressed in this context are as follows:

1. Which category do the in-text expressions in the 3rd grade Life Science textbook correspond to in Lipman's critical thinking theory?
2. Which category in Lipman's critical thinking theory do the activity contents in the 3rd grade Life Science textbook correspond to?

METHOD

Research Design

In this section, the methods, data collection tools, data collection process and analysis used for the purposes of your article should be written together with the reasons why they were used. In this section, the methods, data collection tools, data collection process and analysis used for the purposes of your article should be written together with the reasons why they were used. In this section, the methods, data collection tools, data collection process and analysis used for the purposes of your article should be written together with the reasons why they were used.

In this study, document analysis was preferred since textbook analysis was used. Document analysis is the process of scanning written documents containing information about the phenomena or events under investigation in detail and creating a new integrity from this information (Creswell, 2002). Document analysis not only serves as a complement to other research methods but it can also be used independently (Wild, et al., 2009). The textbook examined in this study was found to be suitable for the nature of document analysis as since it was examined on a written and electronic basis in accordance with the study research topic (Seyidoğlu, 2016).

Data Collection Tools

The study data were obtained from the 3rd grade Life Science book, which is among the books that have been taught as textbooks in primary schools by the Ministry of National Education since 2022. The aim of the 3rd grade Life Science course is to cultivate persons possessing fundamental knowledge and life skills, together with the necessary resources appropriate for their age, through concrete activities (MoNE, 2018). In terms of its content, the curriculum is intensely related to important core values associated with philosophical thinking such as benevolence, justice, and responsibility. Furthermore, the role of philosophy and critical thinking in aiding individuals to discern choices and enhance decision-making (Alkın-Şahin & Tunca, 2015) was acknowledged, with an emphasis on the early acquisition of this talent and relevant educational resources.

During the data collection process, the researchers prepared tables based on Lipman's definitions and examples of questions covering the categories of critical thinking and compared them with the texts and activities in the textbook. In the study, each unit

was analyzed separately so that the differences between the units could be seen. In the data collection process, the text contents and activity questions were mostly based on examining the statements that carry questions such as "what for, why, how and what would you do if it were you?" Again, questions and statements involving creativity were taken into consideration since they cover "multiple perspectives" in Lipman's critical thinking theory.

Data Analysis

Content analysis was used to analyze the research data. Content analysis is a type of systematic unbiased and numerical analysis to measure variables in a text (Wimmer & Dominick, 2000, pp.135-136). In the analysis of the data described by the content analysis technique in the study, firstly, attention was paid to whether the texts and activities were included in Lipman's philosophical critical thinking dimension. The reason for this process is that not every question in the book carries a philosophical content or contains a meaning in the dimension of critical thinking. The questions and contents analyzed are judgments that students can answer why and how questions about events, facts and situations rather than measuring their level of knowledge. In addition, since some questions and contents included more than one category, there were cases where more than one coding was used for a question. The judgments in the text and activity were evaluated through four categories in Lipman's critical thinking approach. These categories are *self-correction, sensitivity to context, criterion/criteria based* and *judgment formation/decision making*. These categories, which were coded numerically, were divided into unit, text content and activity questions and quantified with frequency (f) and percentage (%) values.

Ethical Approval: Since textbooks were analyzed in the present study, ethics committee approval was not required.

Validity, Reliability and Limitations

For the validity and reliability of this study, the peer assessment technique recommended by Patton (2014) was used. To achieve this objective, expert opinions were solicited from doctorate faculty members in the philosophy and social studies departments of two different universities. The experts examined the appropriateness of the codes to the categories. Thus, an agreement was reached between the subjects and it was determined that more than one researcher agreed on a phenomenon and a collective judgment was reached (Lincoln & Guba, 1985).

The study was limited to the texts and activities in the 3rd grade life science textbook. Whether the texts and activities analyzed had a philosophical content or not was determined with the key concepts expressed by Lipman for the categories of critical thinking.

FINDINGS

The aim of the present study was to analyze the texts and activities in the 3rd grade life science textbook according to Lipman's Critical Thinking Theory. As a result of the analyses made for this purpose, 6 units were analyzed through four themes. The identified themes include a) self-correction, b) sensitivity to context, c) being criteria/measure-based and d) judgment formation. Firstly, the total activity expressions within the units and the distribution of activity expressions selected according to Lipman's critical thinking were presented (Table 1).

Table 1. **Distribution of text and activity expressions in the 3rd grade Life Science textbook**

Units	Text and activity expressions		Expressions in Lipman's categories of critical thinking	
	f	*%*	*f*	*%*
Life in our school	43	22,3	22	23,9
Life in our home	33	17,1	13	14,1
Healthy life	25	13,0	17	18,4
Safe life	32	16,6	10	10,8
Life in our country	35	18,2	17	18,4
Life in nature	24	12,5	13	14,1
Total	192	100	92	100

When Table 1 is analyzed, it is seen that the text contents and activities in the 3rd grade Life Science textbook have different distributions in each unit. The units where the distribution of texts and activities is more intense are *"Life in our school*" (22.3%), *"Life in our country*" (18.2%), "*Life in our home*" (17.1%) and "*Safe life*" *(16.6%)*. The units with the lowest text content and activities were "*Life in nature*" (12.5%) and "*Healthy life"* (13.0%). However, when the units are analyzed in Lipman's critical thinking dimension, it is seen that not every question and statement can be evaluated within this scope. It was determined that the

questions and statements in the text and activity were mostly distributed in the units of "*Life in our school"* (23.9%), "*Healthy life"* (18.4%) and "*Life in our country"* (18.4%) in the context of Lipman's critical thinking.

In the text and activity contents of the 3rd grade life science textbook, it is possible to say that there are various solutions to the problem situations encountered in social life, particularly within the triangle of home, school, and classroom. While some texts focus on helping others after the earthquake, some texts examine feelings and behaviors towards peer bullying. In the statements, there are especially questions about the possible causes and consequences of the behaviors. In addition, in the text and activity statements, expressions with root values (justice, friendship, honesty, self-control, etc.) structured on critical thinking draw attention.

Lipman's Critical Thinking Theory in Text Content

The distribution of the expressions and meaning contents in the 3rd grade Life Science textbook in relation to Lipman's critical thinking theory is presented in Table 2.

Table 2. Distribution of the expressions in the text content according to Lipman's critical thinking theory

Units	Self-correction	Sensitivity to Context	Being criteria/measure-based	Judgment Formation
	f	*f*	*f*	*f*
Life in our school	1	2	3	3
Life in our home	2	1	2	-
Healthy life	3	1	2	2
Safe life	1	-	-	-
Life in our country	1	1	3	4
Life in our school	1	-	2	2
Total	9	5	12	11

When Table 2 is examined, it is seen that critical thinking in the 3rd grade Life Science textbook is distributed in different categories. Accordingly, it is seen that the category of self-correction is mostly found in the unit "*Healthy Life" (f=2)*; the category of sensitivity to context is mostly found in the unit "*Life in our school*" *(f=2)*; the category of being based on criteria is mostly found in the units "*Life in our school*" *(f=3)* and "*Life in our country"* (f=); and the category of forming judgments is mostly found in the units "*Life in our country*" *(f=4) and "Life in our school*" (*f=3)*.

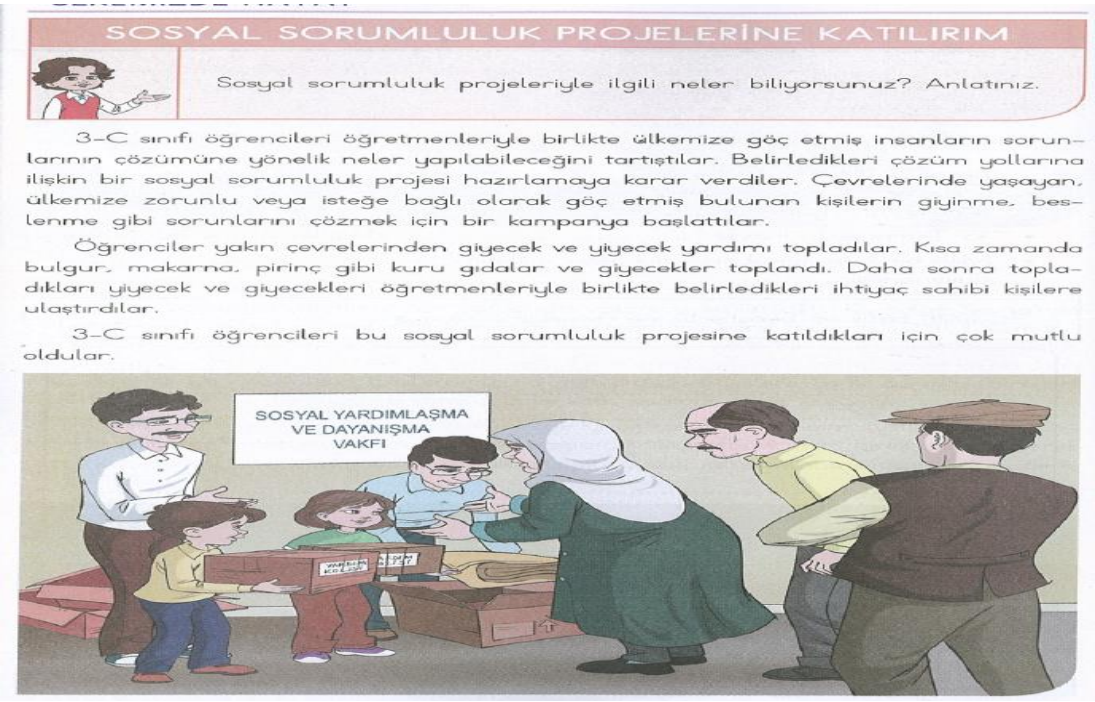
In the 3rd grade Life Science textbook, sample text expressions can be listed as follows:

Self-Correction: In the *"Life in our school*" unit in the examined Life Science textbook, an image of students playing a game draws attention. In this visual, there is a dialogue text about questions such as what the right behavior is and how it should be. The fact that a student thinks about their behavior and apologizes to their friend by realizing that they acted wrong can be shown in the "*self-correction"* category of Lipman's critical thinking (Image 1).

Image 1. Consequences of our behavior (Self-correction)

Context Sensitivity: The text "*Participation in Social Responsibility Projects*" in the "*Life in our country*" unit can be given as an example for the category of context sensitivity. In Visual 2, the discussion of what assistance can be provided to people who have immigrated to our country and then taking action by developing a project corresponds to the category of "*showing behavior by*

taking into account the relevant conditions" of context sensitivity. A special behavior was developed for individuals who migrated to our country and need material and moral help (Image 2).



Visual 2. Participation in social responsibility projects (Sensitivity to context)

Being Criterion/Measure Based: The text "*Our Duties and Responsibilities*" in the "*Life in our country"* unit can be used as an example for this category. The question "Why do you think we should try to do our job in the best way?" in the text and the teacher's statement *"If everyone does their job completely and well, our country will develop."* in the process of the mother and daughter's search for an answer to this question are associated with the result of the criteria met (Visual 3).

Visual 3. Our duties and responsibilities (Based on criteria/measure)

Judgment Formation: For the judgment dimension, which is expressed as opinion, prediction and final conclusion, it would be appropriate to give an example of the dialogues in the text "*We are organizing a charity campaign*" in the "*Life in our school*" unit. The summary of the dialogues in the text starts with the question "*How can I be useful to people who need help in the event of an earthquake?*" and ends with organizing a collective aid campaign. The decision reached in the text and its implementation can be shown as an example of Lipman's "*judgment formation"* category (Visual 4).

Visual 4. We are organizing a charity campaign (Judgment formation)

Lipman's Critical Thinking Theory in Activity Content

The distribution of the activity questions and statements in the 3rd grade Life Science textbook according to Lipman's critical thinking theory is presented in Table 3.

Table 3. Distribution of questions and statements in the activities

Units	Self-correction	Context sensitivity	Being criterion/measure-based	Judgment Formation
	f	*f*	*f*	*f*
Life in our school	1	2	4	6
Life in our home	-	2	3	3
Healthy life	-	2	5	2
Safe life	-	-	3	6
Life in our country	-	-	4	4
Life in nature	-	-	3	5
Total	1	6	22	26

When Table 3 is analyzed, it is seen that the activity questions and statements in The 3rd grade Life Science textbook, the self-correction category was found only in "*Life in our school" (f=1); the* sensitivity to context category was found in "*Life in our school" (f=2)*, "Life in *our home" (f=2)* and "*Healthy life" (f=2)*; It is seen that the category of being based on criterion/measure is mostly distributed in "*Healthy life" (f=4, Life in our school (f=4) and Life in our country (f=2);* the category of forming judgments is mostly distributed in *"Life in our school" (f=6)* and *"Safe life" (f=6)* units .

When we look at the distribution of the questions and statements in the activities throughout the unit, it can be said that most of the categories are distributed in the categories of *judgment formation (f=26)* and the fewest categories are distributed in the categories of self-correction *(f=1).*

In the 3rd grade Life Science textbook, sample activity questions and statements are as follows:

Self-Correction: The question "*What should you do to develop your interests and skills?" in* the activity section of the "*Life in our school*" unit aims to help individuals recognize, question, discover and develop their interests. In this context, it can be said that the question corresponds to "*self-correction*" in Lipman's critical thinking category.

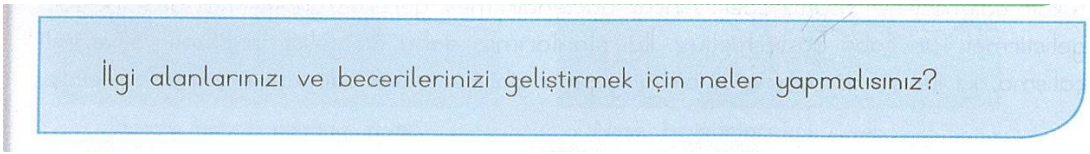
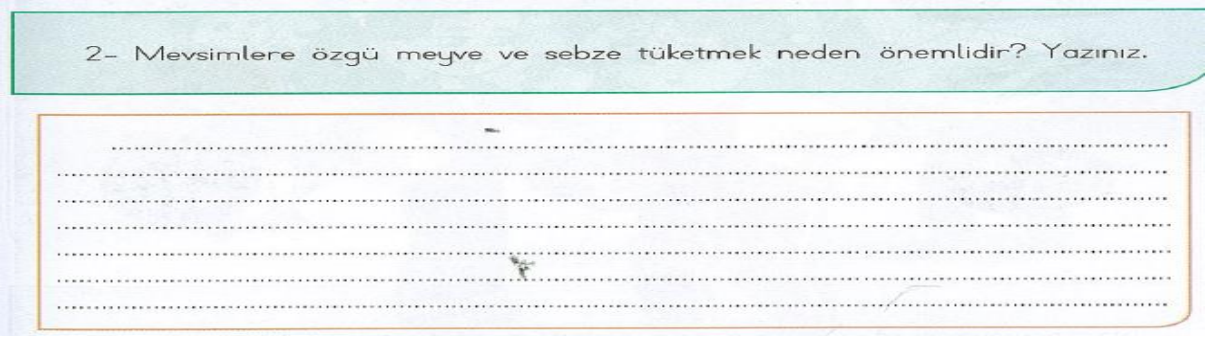


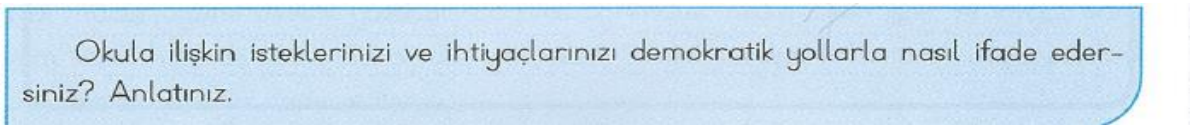
Image 5. Life in our school – I am doing the activities (Self-correction)

Context Sensitivity: The question "Why is it important to consume fruits and vegetables specific to the season?" included in the activity questions of the **"***Healthy life"* unit aimed for the individual to recognize the fruits and vegetables specific to the winter season and to develop a thought on why these products should be eaten in this season. (Image 6)



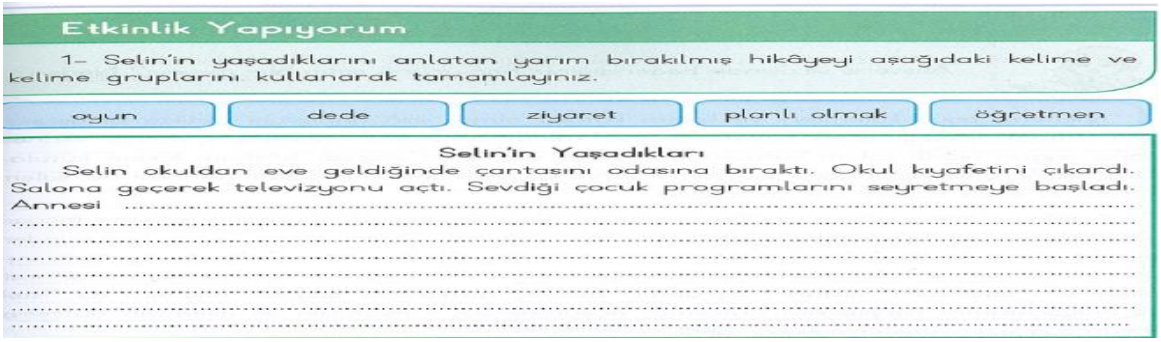
Visual 6. Healthy life – I am doing the activities - (Sensitivity to context)

***Being Criterion/Measure Based*:** With the question "How do you express your wants and needs about the school in democratic ways?" in the activities related to wants and needs in the "*Life in our school"* unit, the individual was asked to express their opinion according to the approach taken as a criterion (democracy). Therefore, it can be said that this question corresponds to Lipman's *criterion/measure-based* category.



Visual 7. Life in our school-I am doing the activities- (Being criterion/measure based)

Judgment Formation: In this statement in the "*I'm Doing an Activity*" section of the "*Life in our home*" unit, the incomplete story was asked to be completed with certain words. The main purpose of the activity is to enable the student to complete the story by using their decision-making skills (Figure 8).



Visual 8. Life in our home-I'm doing an activity- (Judgment formation)

DISCUSSION and CONCLUSION

In modern history, critical thinking has existed as a reasonable and reflective thinking focused on deciding what to believe or what to do (Ennis, 1996). This approach is also considered as an important threshold in the creation of the knowledge society. In other words, individuals who are involved in such a structured educational process and who have this type of thinking gain the ability to analyze materials and determine their validity through their questioning skills. Therefore, the development of coherent and logical reasoning models (Stahl & Stahl, 1991) and the formulation of logical conclusions (Simon & Kaplan, 1989) are extremely important in critical thinking. Critical thinking, which is a motivated and logical reasoning in reaching the right judgment with ideas, opinions, actions, reasons and evidence, paves the way for raising qualified individuals in educational life by consciously determining acceptance and rejection (Moore & Parker, 2009). In this study, the 3rd grade Life Science textbook was examined through the categories of the critical thinking model put forward by Matthew Lipman and the distribution of these categories according to the units was revealed. The results showed that the philosophically based critical thinking components in the 3rd grade Life Science textbook have different quantitative distributions among the units. However, most of the existing text and activity contents do not carry the critical thinking categories in Lipman's statement. In the textbook, it is seen that the cognitive approach in which students discover and self-regulate themselves and develop a cognitive approach specific to a certain situation is given less space than the categories of criterion formation and judgment formation. When the distribution of the questions and statements in the activities in the 3rd grade Life Science textbook is examined, it can be said that they are concentrated in the categories where students evaluate and make judgments according to criteria. Basically, the individual goes through an evaluation process while reaching the judgment dimension. This process involves evaluating the reliability of sources as well as logical expressions. In this category, the individual evaluates the claims and arguments within the framework of their own opinion and makes a judgment. Hence, judgment formation is a process that involves identifying elements to reach a reasonable conclusion,

forming a hypothesis, and drawing conclusions from data, statements and evidence. This breakdown of activity wording also encompasses students' rational thinking to gather, interpret and evaluate information to reach a judgment (Suhartoyo, 2017).

International studies on the subject emphasize the necessity of critical thinking in primary education (Sarwanto et al., 2021) and the growing popularity of thinking skills in schools (Burke & Williams (2008)) and the importance of integrating them into the subject content of textbooks. Thus, it is possible to provide students with an intuitive understanding based on critical thinking (Paul et al., 1990). In studies, it is stated that the critical thinking levels of primary school students are at an intermediate level (Fajari, 2020), and critical thinking increases when supported with reflective thinking strategy (Nuraini et al., 2020). It has been revealed that the multiple-choice questions in primary school textbooks measure the cognitive aspect of critical thinking more and do not measure the tendencies of critical thinking (Ku, 2009). In national studies, inadequacy of the content has been put forward in various studies on the Life Science curriculum and textbooks. The Life Science curriculum outcomes are insufficient in terms of supporting students' personal development (Peker, 2023). In addition, it is argued that the themes do not sufficiently develop students' problem solving, critical thinking and metacognitive skills (Kökten, 2015). It has been observed that creative and critical thinking, which is among the general objectives of the Life Science course, is limited to beginner-level behaviors such as knowledge and comprehension in terms of developing characteristics such as environmental protection, solidarity and cooperation (Alanç, 2019). Some studies indicate that critical thinking skills are perceived as a form of reasoning focused solely on addressing "why" questions. Furthermore, there is an unequal distribution of content in textbooks, lacking diversity in teaching strategies, methods, and techniques (Akbay, 2017). In another study evaluating the Life Sciences textbooks according to the revised Bloom's taxonomy, it was stated that the learning outcomes were mostly at the “understanding” and “remembering” levels (Kalender & Baysal, 2021).

It was observed in the current study that the activities do not have sufficient time and content for critical thinking. Students' guiding themselves and situations with questions such as why and how requires a certain contextual structure and, most importantly, time. Therefore, teachers have a huge responsibility in terms of being a guide. Understanding, questioning, and thinking skills acquired at an early age are of great importance in developing an inquisitive perspective. This approach is directly related to the "Philosophy for Children (P4C)" theory proposed by Lipman (Kökten, 2023). The MoNE has the same philosophical structure that focuses on human beings and society. Both approaches aim to raise individuals who can produce solutions to problems, criticize, and use knowledge functionally in their lives (Kulkul, 2022). The statements of the teachers working in the textbook writing commissions about critical thinking are that this way of thinking has a knowledge purpose and basis (Nasırcı & Aybek, 2018). However, critical thinking is a cognitive process that is necessary not only for the acquisition of knowledge or philosophy but also for the individual's entire life. Critical thinking should be considered as a skill used in the process of providing an overview of the individual's education and later life, creating cooperation, and expressing ideas (Kuşçu, 2023). In this way, the individual establishes healthier relationships within the community. A more democratic structure is formed in society (Çakır-Kaytancı, 2022). The fact that philosophical thinking involves questioning and that its rules and principles are suitable for critical thinking reveals the strong relationship between philosophy and critical thinking (Alkın- Şahin & Tunca, 2015).

RECOMMENDATIONS

Critical thinking is not a condition that necessarily accompanies human development, but is considered a skill that can be taught and developed through different teaching strategies. In an age where textbooks are rapidly becoming outdated and innovation is constantly taking place in every field, the ultimate and general goals of education, traditional teaching and learning methods, the passive positioning of the learner in the educational environment and the status of being a passive receiver have undergone change. Since the educational needs of present and future generations will not be the same, an infrastructure that will enable learners to think freely, creatively, critically and scientifically is required for the proper education of learners (Woolfolk, 2000). As a whole, it is very important that the tools and materials used in the education system are of a quality that develops critical thinking. In this process, in which teachers are also responsible, concepts, skills and attitudes should be selected in a way that is consistent with the basic goals. Educational goals for raising an inquiring, critical and active individual should be accepted as an important goal in courses taught at all levels and changes should be made in practice.

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We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

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