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An Investigation of the Critical Thinking Skills of Fourth Grade Students in Real-Life Situations

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***Abstract*:** The aim of this study is to examine to what extent and how fourth-grade students use their critical thinking skills in real-life situations. The method of the research is instrumental case study, which is one of the qualitative approaches. Typical case sampling was used in the study and 30 fourth grade students from 11 different schools in Ankara were included in the study. Fake news and semi-structured interview form prepared by the researcher were used as data collection tools. During the implementation phase, the students were shown fake news and asked whether this was true or not. Afterward, interviews were made using the Socratic inquiry method over the comments created by the researcher. Six elements of thinking developed by Paul and Elder (2013) on critical thinking approach [(a) knowledge, data and experience, b) concept, c) perspective d) assumption e) inference, f) implicit inferences and results] used. During the data analysis, the codes were reached in line with the research problems, and the themes were reached by finding common aspects between the emerging codes, that is, by collecting them under categories. In this study, the data were subjected to content analysis by two researchers independently and the consistency between researchers was calculated as 87.5%. As a result of this study, it was determined that 92% of the expressions of primary school fourth-grade students were in the weak critical thinker category.
Keywords: Critical thinking state, Primary school, Instrumental case study, Fake news.

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Introduction

As the line between "what is real" and "what is not" has started to disappear, the phenomenon of lie, the concept of post-truth (trivializing the truth) has started to enter our lives more and more. Post-truth populist discourse prevails over “reality”, the irrational find more supporters over objective facts; emotions and personal beliefs take precedence over objective facts in the formation of social views (Levitin, 2017; Oxford Dictionaries, 2016). The abandonment of rational approaches such as logic and reasoning and making decisions based on beliefs threaten not only the society in which we live but also future generations. In the face of such a threat, raising individuals who can approach events critically instead of individuals who accept everything as they are and obey without question, has become the primary educational goal of countries (Alpay, 2017; Ten Dam & Volman, 2004). With this purpose, critical thinking skills have been added to the goals of curricula in many countries (Griffin, McGaw, & Care, 2014; National Research Council, 2011; Trilling & Fadel, 2009). It is also seen that critical thinking is one of the most sought-after skills in the 2022 business world (World Economic Forum, 2018) and is one of the essential life skills in the 21st century (Partnership for 21st Century Skills, 2019). In fact, critical thinking skills are found in all people according to Paul and Elder (2013). However, people either do not use this skill at all, or "use it weakly" or "use it strongly". People who have never used critical thinking are full of prejudices and approach events with stereotypes, generalizations, and oversimplifications. Weak critical thinkers can use critical thinking but use it to defend their own views and manipulate individuals who never think critically. In addition to all these, strong critical thinkers prefer to be impartial and view events from different perspectives. They are not self-centered because they seek what is good for humanity (Noddings, 2017). The goal of education is to enable individuals to use critical thinking at a strong level. In order to achieve this, it is necessary to define well what critical thinking means.

In defining critical thinking skills, philosophers have treated it as reasoning and reflective thinking, while psychologists have treated it more as problem-solving skills (Lewis & Smith, 1993). In this study, critical thinking was considered and used as a reasoning skill. For this reason, definitions in philosophical views were included. Ennis defined critical thinking skill as “reasonable reflective thinking focused on deciding what to believe or what to do” (Ennis, 1985). According to Lipman, critical thinking is “skillful, responsible thinking that facilitates good judgment because it (1) relies upon criteria (2) is self-correcting, and (3) is sensitive to context” (Lipman, 1988). As can be seen from the definitions of Ennis and Lipman, critical thinking is high-level thinking that enables us to control our own thinking. Researchers who have worked on critical thinking have agreed that a number of cognitive skills (analyzing arguments, making inferences by induction or deduction, reasoning, evaluating, making decisions, problem-solving, etc.) and tendencies (openness and fairness, curiosity, flexibility, tendency to seek reasons, desire to be well informed, desire to respect various different points of views, etc.) need to be developed continuously in order to acquire this critical thinking skill (Bailin, Case, Coombs, & Daniels, 1999; Ennis, 1985, 1989; Facione, 1990; Halpern, 1998; Paul & Elder, 2013).

Researchers who have worked on critical thinking state that the skills and dispositions mentioned above can be taught (Lai, 2011). However, the current education system is thought to be inadequate to develop critical thinking skills (Halpern, 1998; Paul, 1992; Sternberg, 1985) and studies are conducted to increase this skill. When the literature is examined, it is seen that researchers focus on young people and adults (Azar, 2010; Fero, Witsberger, Wesmiller, Zullo, & Hoffman, 2009; Fischer, Spiker, & Riedel, 2009; Koray & Köksal, 2009; Noohi, Karimi-Noghondar, & Haghdoost, 2012; Oja, 2011; Tümkaya, Aybek, & Aldaş, 2009). However, Willingham (2008) states that critical thinking can be seen even in a three-year-old child, Bailin et al., (1999) show that children start to think critically before coming to school, and Paul and Elder (2013, 27) also show that people have innate critical thinking skills, but this can be improved through education. In the APA Delphi report, it was stated that critical thinking education should

not be limited to secondary schools and high schools, but it should be included in all levels of education (Facione, 1990). In Turkey, it is emphasized that individuals need to be critical thinkers from primary school as an educational destination. This emphasis is made both by the item "Having critical thinking skills as individuals who know the ways to reach correct and reliable information" in the Social Studies Curriculum (Ministry of National Education-MoNE, 2018), and by including critical thinking skills under the basic skills in the same program.

Despite all the measures taken and efforts made, it is seen that the critical thinkers targeted in the curriculum (domestic and international) experience problems in the face of real-life situations (Organization for Economic Co-operation and Development, 2016; Sternberg, 1985). One of the biggest reasons for this is that problems do not arise directly in a structured way in real-life situations. Generally, students need to realize that there is a problem. In addition, these problems have different aspects such as defining, complex structure, not having a single answer, requiring formal and informal information (Sternberg, 1985). For these reasons, curricula should focus not only on developing critical thinking but also on its transfer to real-life situations. Because individuals should be able to transfer their critical thinking skills to real-life situations and solve the problems they encounter. Fake news shared on social media can be shown as an example of the problems in the mentioned real-life situations. Since 2016, the rate of people encountering fake news on social media has increased (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2017, 2018; Newman, Fletcher, Kalogeropoulos, & Nielsen, 2019). For example, in a recent report published by the Reuters Institute at Oxford University, the people, who participated in the survey from Turkey, claimed that 49% of the news they encountered was fake news (Newman et al., 2018). In addition, according to the Turkish Statistical Institute's (TSI) data in 2018, 90% of individuals aged 16-24 use the internet (TSI, 2018), it can be said that future generations will face the problem of fake news the most. Critical thinking skills, which are aimed to be developed from the fourth grade of primary school, should be aimed to be used effectively in real-life situations such as fake news. For the realization and development of such a goal, evaluation studies that can determine the level of the current situation are needed.

In the literature, there are two studies in which a measurement tool has been developed to determine the critical thinking skills of primary school students. One of these is the critical thinking scale for primary school 4th and 5th-grade students developed by Demir (2006) within the scope of the social studies course. The other is Gelerstein, Río, Nussbaum, Chiuminatto, and López (2016)'s critical thinking test for 3rd and 4th-grade students within the scope of the language arts course. These two studies are aimed at determining the level of critical thinking through a discipline. However, there is no study in the literature to determine the extent to which students transfer the critical thinking skills provided by curricula to daily life.

This study aims to examine to what extent 4th-grade students transfer and use the critical thinking skills to real life. For this purpose, the following questions were sought in the study:

1. To what extent can fourth-grade students use their critical thinking skills?
2. How do fourth-grade students use their critical thinking skills in the face of sample situations presented to them?
3. How do fourth-grade students transfer their critical thinking skills to daily life situations?

Methodology

In this study, instrumental case study, one of the qualitative approaches, was used. Instrumental case study is used to provide a better understanding of a curious problem or a subject (Hancock & Algozzine, 2006). According to Stake (2005), in the instrumental case study, a specific case is used to reveal the subject of interest. Thus, researchers can examine the existence

of a phenomenon through a specific situation. While the subject of interest in this study was to discover students' critical thinking skills in daily life, the fake news phenomenon was used to investigate the subject in depth. There are several reasons why fake news is suitable for in-depth investigation in real-life situations. These can be listed as; a) contains more than one discipline, b) has a complex structure, c) contains different interpretations, d) the content is interesting for students, e) suitable content for the application of critical thinking skills processes, e) has context to enable students to use their formal and informal knowledge.

Participants

According to the MoNE social studies curriculum, critical thinking skill is included in the basic skills that should be acquired at the 4th grade level for the first time (MoNE, 2018). As a result, it was deemed appropriate to select primary school 4th-grade students as participants in the study, since they are expected to have basic critical thinking skills when they finish the 4th grade.

Since the aim of the study is to explore students' critical thinking skills in daily life, the participants were selected from purposeful sampling methods according to the typical case sampling method. In typical case sampling, the aim is to conduct research on average to gain information about a particular situation (Patton, 2015; Yıldırım & Şimşek, 2006). 30 students studying in Ankara central districts (Yenimahalle, Çankaya, Keçiören) in 2019 were included in the study. Also, to minimize the school differences in the study, interviews were conducted with two students (one boy, one girl) from each school and 10 students from each district.

While choosing the students to be included in the study group, first the necessary permissions were obtained from the Ministry of National Education, later the researcher went to the schools to be familiar with them and created a list of volunteer schools. Finally, an average of two students from among the volunteer students at each school were included in the study under teacher consultancy. After recruiting 10 students from each district, it was concluded that the answers given were repetitive and the data satisfaction was reached.

Data Collection Method

In the study, the semi-structured interview method was preferred as the data collection method. In this interview method, the researcher asks the questions that he has prepared before, depending on the subjects he is based on. This method also provides the researcher with the opportunity to ask improvised questions to dig deeper (Yıldırım & Şimşek, 2006). In this context, firstly, 4th-grade students were given the situations that they may encounter in their daily life; afterwards, they were asked questions about how they interpreted these situations. The flow monitored during the study is given below:

Preparation before Application

1) In order to discover students' critical thinking skills in daily life, fake news that they can easily encounter on social media have been selected. It has been deemed appropriate to receive fake news from Facebook, Instagram, and Twitter social media networks that students can access directly or indirectly.

2) While selecting fake news, the verification platform, **Teyit.org**, was used. The reason why **Teyit.org** is preferred is that it has joined the "International Integrity Check Network" and is a reliable source that makes objective evaluations (Erkan & Ayhan, 2018).

3) As a result of the research conducted on the Teyit.org website, seven fake news that are suitable for the level of primary school 4th-grade students and useful for the study to be conducted. Selected news are given below:

    a. **The news of a drug brought from Africa and sold in schools:** This fake news spread as a result of being shared on social media by writing an article that it is an African drug under an image. There is also a contradiction in the content of the news that the police are unaware of the subject and that if it is seen, the nearest police station should be visited. The alleged image in the fake news is the seed of the plant known as cannabis (Acanerler, 2019c).

    b. **The news that when water is added to a liquid, which is illegally brought from China, the water turns into milk.** This fake news is a video about a person changing color by adding water to boron oil. Based on the fact that its color resembles the color of the milk, this fake news has been shared on different social media accounts (Acanerler, 2019b).

    c. **The news that mince in the market contains food coloring:** In this fake news, it was shared on social media that the minced meat in the market gave the water a pinkish color and that it was food coloring. The truth of the fake news is that the myoglobin protein changes its color as a result of mixing with water (Acanerler, 2019a).

    d. **The news that 5-liter oil bottles were underfilled:** This fake news spread on social media after it was claimed that a 5-liter-oil-bottle in the market was weighed less than five kilograms and that the material was stolen. The error leading to fake news is the confusion of the concepts of liter and kilogram (Silsüpür, 2018).

    e. **News about the farmer admitting that he used to grow peppers using nitric acid:** In this fake news, a farmer claimed that he was growing his crops using harmful chemicals and posted it on social media in video form. It was stated by the filmmaker that the fake news was actually a reaction video shot for irony. In addition, it is impossible for plants to grow with the mentioned chemicals (nitric acid, mercury, etc.) (Çavuş, 2018).

    f. **Video news showing fake meat production in China:** Fake news spread on social media after the claim that individuals in a video were secretly recorded while making fake meat. The video that led to the fake news is actually due to the fact that the rubber dough looks like meat (Arabacı, 2019)

4) The original sharing style of the selected news was adhered to, but the names and pictures of private individuals were changed in order to avoid ethical problems (see Appendix 1).

5) Sample comments that students may encounter on social media platforms have been prepared. While preparing the comments, the fraudulent thinking methods stated by Paul and Elder (2013) in their book were used (see Appendix 1).

6) In order to determine the suitability of fake news and written comments to student level, three experts in the field of educational sciences were consulted and inappropriate expressions were removed.

Application

1. Since the aim of this study is to explore the critical thinking situations of primary school 4th-grade students, the Socratic inquiry method was used to reveal the current critical thinking skills. Socratic questioning is a discipline of inquiry that can be applied for many purposes and many directions. Among the purposes of this inquiry: exploring complex ideas, getting the truth of things, examining issues and problems, revealing assumptions, analyzing concepts, distinguishing what we know from what we do not know, and following the logical implications of our thinking. Socratic questioning differs from normal questioning in that it is systematic, disciplined, and profound. It also focuses on the foundation of problems, problems, theories, principles, or concepts (Paul & Elder, 2006; 2014).

2. In this study, for the practice schools, necessary permissions were obtained from the Ministry of National Education and approximately 40 minutes of individual interviews were conducted with 4th-grade students during school hours, without interrupting their lessons.

3. During the interviews, the fake news image or videos were first shown to the students, and then, various questions were asked to the student in order to reveal his/her thoughts about the news. Students' answers were recorded by the reporter. Sample questions are given below:

    - What do you think was the cause of this case?
    - Why did you say that?
    - Can you explain more?
    - Let's see if I understand you correctly; _____ is that what you mean?
    - I see your assumption is ___. Well, how would you defend yourself against someone with an opposite opinion for that?
    - What would someone say who disagreed with this situation?

    4. Upon the student's thought of the news as true or false, comments supporting his / her opinion were shown to the student. Sample questions used after reading the comments are given below:

    - What do you think about ___'s comment?
    - Can you summarize the comment posted by ___?
    - Could there be more logical implications for this situation?
    - Can we trust the accuracy of this information?

    5. After the student expressed his / her opinion on the comments that were close to his / her own, comments that did not support his / her thoughts were shown. Sample questions used after reading the comments are given below:

    - How would you respond to the objection made by ___?
    - How are the perspectives of ____ and perspectives of ___? What do they mean?
    - Why are you based on an idea ___and not an ___?
    - D. If this is true, how can we check?
    - e) How can you respond to the objection made by ____?
    - Why are there different opinions? What could be affecting them?

    6. After reading two different comments, the student was given time to review the comments once more if he wishes. Then, questions were asked to enable the student to state his conclusion. Sample questions used are given below:

- What conclusion did you come to about this case?
- Is this information enough to come to a conclusion? If not, what would you do?
- I see you approach the subject in terms of ___. Why did you approach it from such an angle when there was that angle?
- Could someone else come to a different conclusion about this situation?
- What if you would be convinced on the contrary? (Who would say?)

Analysis of Data

This study was developed and applied to Paul's (1993) critical thinking approach. Therefore, the six out of the eight thinking elements considered appropriate for the application to be made were used. These categories are; a) knowledge, data, and experience, b) concept, c) perspective d) assumption d) inference, e) implicit inferences and consequences (Paul & Elder, 2013). These categories formed the basis for the analysis of the study. Such as, in the sample comments presented to the students, in the questions directed during the interview, and in the analysis of the interviews. Information on what each category is, how it is processed and what is expected in this category is given below.

Knowledge, data, and experience: In order for individuals to reason, they should be based on knowledge, data, and experience. In order to complete the reasoning in a healthy way, individuals are expected to inspect regularly the source of this foundation. The foundation is expected to be strong, as in buildings. What is expected from students; First of all, they should question the source of the information given in the fake news or they shouldn't reach a decision without learning all the information about the subject. Subsequently, students should be able to distinguish between relevant and irrelevant information after reading the information given in the comments. When the student sees information that is contrary to his / her opinion regarding the accuracy of fake news, he/she should take it into consideration (Paul & Elder, 2014).

Concept: Individuals explain the issues they reason about through certain concepts. The place and meaning in which these concepts are used often directly influences reasoning. Under this category, the concepts used by the students in their comments on fake news were examined. Students are expected to realize the concepts they know when they are used outside of their scope, and to be able to explain the concepts they used or what meaning the used concepts have. (Paul & Elder, 2014).

Perspective: It is very important for critical thinking that individuals are open to thoughts other than their own. In this way, individuals can stop thinking self-centered and approach events from different angles. Under this category, students' reactions to different perspectives were analyzed. What is expected from students; It is the ability to evaluate objectively when he/she sees a point of view that is opposite to the point of view he/she originally put forward (Paul & Elder, 2014).

Assumptions: All inferences to be made in critical thinking are based on assumptions. Assumptions are ideas that we believe to be true and which are found to be right or wrong. What is expected from critical thinkers is to be aware of the assumptions that lead to inferences and to be able to evaluate them. Under this category, students are expected to make defensible and logical assumptions or be able to realize their assumptions that are illogical (Paul & Elder, 2014).

Inferences: Critical thinkers make inferences from assumptions to make sense of data. These inferences are built on the fact that something else is right and may end up as right or wrong, logical or illogical, right or wrong. Under this category, students are expected to express

their inferences clearly, able to make these inferences on evidence and reasons, make reasonable inferences and make consistent inferences (Paul & Elder, 2014).

Implications and consequences: Critical thinkers know that the inferences they make in a situation have consequences. Being aware of this and avoiding possible misunderstandings is an important issue for critical thinkers. In this category, students are expected to consider and be aware of the possible consequences of their inferences from fake news. For this reason, students were given different examples of results through comments on the fake news, and the question was asked how we can check the accuracy of the fake news and comments (Paul & Elder, 2014).

The data collected in the study were analyzed using content analysis. For the analysis of the case study, which is used as a method, it is necessary to fully understand the situation. Since many different aspects of the situation can be encountered in this process, the complexity of the structure requires content analysis (Merriam, 2013). In the content analysis, the hidden meanings in this complex structure are revealed. It is aimed to reveal students' critical thinking processes in a holistic structure.

The interviews were recorded by a reporter and then transferred to the computer environment. When each interview was to be recorded, codes such as T1, T2… were used for the students. As stated in Yıldırım and Şimşek (2006) in their book, data were analyzed in four stages while analyzing:

1. Coding of data: The data were coded by two researchers. During coding, possible differences of opinion were shown to the consultant and two more experts in the field. Re-coding was considered appropriate in line with the feedback given.

2. Creating themes: Themes have been reached according to the similarities and common aspects between the codes. While revealing the themes, attention has been paid to the fact that the codes under the theme are a meaningful whole and the created themes explain the obtained data.

3. Arranging and defining data according to codes and themes: The obtained codes and themes were transferred to the Excel environment by the researcher and classified in a clear and understandable manner.

4. Interpreting the findings and creating a report: The necessary comments were made according to the defined codes and themes, and then the results were reported.

In order to ensure internal validity (credibility) in the study, the researcher trilogy (Guion, Diehl & McDonald, 2011) was made and participant confirmation was used. For external validity (transferability), descriptions of participants are made and their direct statements are included. For internal reliability (consistency), each person in the data analysis was audited by the consultant and two experts in the field. This similarity, which is called internal consistency in Miles and Huberman model and conceptualized as a consensus between coders, was calculated using the formula: $\Delta = \mathbb{C} \div (\mathbb{C} + \partial) \times 100$. In the formula, Δ: Reliability coefficient, $\mathbb{C}$: Number of subject/terms agreed upon, ∂: Number of subject/terms on which there is no consensus. According to the coding control, which gives the internal consistency, it is expected that the consensus between coders should be at least 80% (Miles & Huberman, 1994). In this study, internal consistency was calculated as 87.5% in total. Internal consistency in the sub-categories was calculated as 90%, perspective 81%, assumption 86%, inference, and interpretation 86%, and implicit inferences 88%. Later, the coders came together and reached a compromise for the expressions in disagreement. The consistency of the student in the expression was taken into account in resolving the disagreements. In order to ensure external reliability, rich and intense

descriptions were included. During the research, all data were systematically classified in the digital environment.

Results

Semi-structured interviews were conducted with the students in this study, which aims to discover to what extent fourth-grade students transfer and use the critical thinking skills provided by educational programs to daily life. The findings regarding the sub-problems investigated are presented below. In addition, students' critical thinking situations were discussed in six categories: (knowledge, concept, assumption, perspective, inference, implicit inference, and conclusions (Paul & Elder, 2013).

Sub problem 1: To what extent can fourth-grade students use their critical thinking skills?

In order to find an answer to the first sub-problem of the study and to determine to what extent fourth-grade students were able to use their critical thinking skills, the students were first shown a fake news image or video. Later, the student was asked various questions about the news. As a result, the critical thinking situations of the students according to the critical thinking approach of Paul (1993) are given in Figure 1.

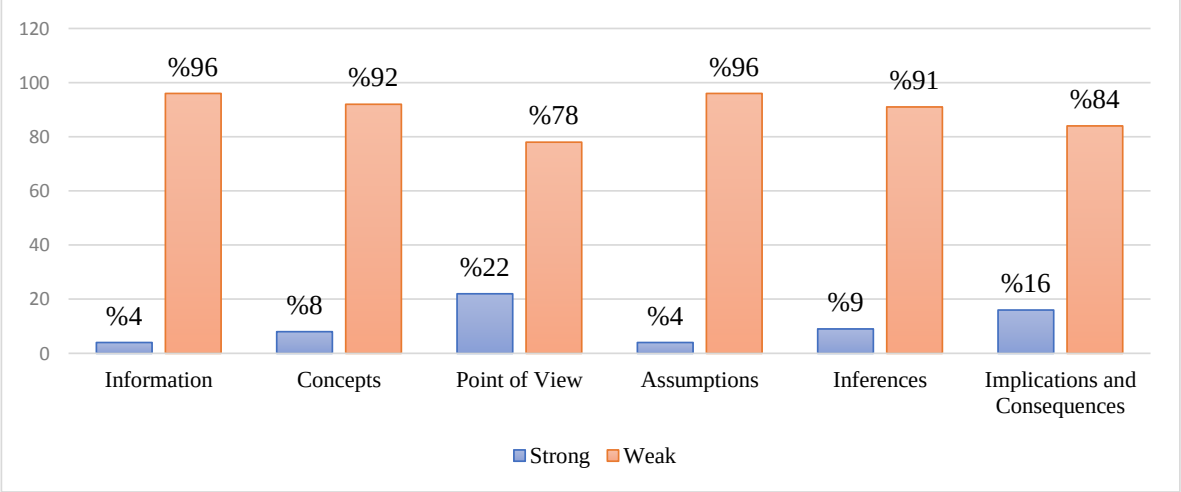

Figure 1. Critical thinking distributions of fourth-grade students according to Paul's (1993) critical thinking approach

When Figure 1 is examined, it is seen that students remain at a weak level in terms of critical thinking skills (CTS) in all six categories. Following statements were found to show weak CTS; 96% of 122 statements (117 weak CTS) in the information category; 92% of 40 statements in the concept category (37 weak CTS); 78% of 60 statements in the perspective category (47 weak CTS); in 96% of 235 statements in the assumption category (226 weak CTS); in 91% of 222 statements in the inference category (202 weak CTS); In the category of implicit inference and conclusions, 84% (37 weak CTS) of 44 statements were found to exhibit weak CTS. It is seen that students showed stronger CTS to the point of view category compared than other categories.

Sub problem 2: How do fourth-grade students use their critical thinking skills in the face of sample situations presented to them?

The findings obtained for the second sub-problem of the study were discussed under the sub-categories determined in the study. These sub-categories are based on Paul's (1993) critical thinking approach. Examples of weak CTS cases are presented below sub-categories due to the high quantity of statements with weak CTS (as seen in Figure 1) and in order to examine those problematic areas.

Knowledge: Students should be based on knowledge, data, and experience in order to reason. When the interviews with the students were examined, it was seen that there were 122 statements that could fall under this category. Looking at the findings, it was found that 96% of these 122 statements showed weak CTS and 4% strong CTS. Below are four examples of problems common in interviews with students that cause them to be shown weak CTS.

Example 1
[Researcher] - Do you think these are boron oil or milk?
[Student 4] - I think Chinese people drink boron oil.
[Researcher] - Then how do they drink it if it tastes bad? (the comment says it tastes bad)
[Student 4] - Everyone's taste is different. What is good for them is not good for us.
[Researcher] - Do you say: "boron oil is used for different purposes in different countries."
[Student 4] - Yes, the knickknackery can be used as something different here.

In Example 1, there is an interview with the student about the accuracy of fake milk news. The student encountered a comment claiming that the product referred to as fake milk is actually boron oil. When he learned that this boron oil was used in industry, he inferred that it was drunk as fake milk in China and supported his argument by stating that the goods had different purposes in different cultures.

Example 2
[Researcher] - Well, I'll ask you something. What do you think of this comment?
(Comment: "I don't believe China produces fake meat. If it were, America would have produced and sold it first.")
[Student 2] - It comes to America from China, and it is impossible for them to produce.
...
[Researcher] - How did you learn this information? How do you know these products came from China?
[Student 2] - Because it says China is behind everything.

Example 2 includes a conversation with the student in which one of the comments in the fake meat news is evaluated. The student claimed that China sending fake meat to America and America cannot make fake meat. The reason for this was that he supported his argument by claiming that all products are of Chinese origin.

Example 3
[Researcher] - Has China produced fake milk?
[Student 11] - I don't think so, but it's not impossible.
[Researcher] - Why don't you think?
[Student 11] - They make the cheap version of most things anyway; I don't think they can do that. They don't have such technology.

Example 3 includes the interview with the student about the accuracy of fake milk news. The student claimed that fake milk cannot be produced in China. He explained this claim by the fact that China produced cheap goods and they did not have such technology.

Example 4

[Researcher] - I got it. Can you read the comments on this side, let's talk later? What are they saying?

[Student 11] - Here, too, someone said, "Native to India… popularly known as cannabis in Turkey". I think of what they said the Indian in the previous milk topic (talking about the fake milk news). Our teacher was also telling us in the lesson that India was… the country where more crime happened than most countries. He said the same about Chinese people too, child abduction or something."

In Example 4, the student was asked to examine the comments written on the fake drug news. As seen in the example, the student evaluated a final comment. The student supported the comment in a negative sense, claiming that India has a higher crime rate compared to other countries.

One of the problems that can be categorized as a weak critical thinker is information that is not related to the subject, as can be seen in Example 1. In this example, the student first put forward the argument that there are different cultural tastes, and then put forward the knowledge of differences in cultural use of items unrelated to the subject. Similarly, When asked about the fake milk news to another student, ("Do you think we are drinking this?") student replied ("I don't know, but I think Atatürk Orman Çiftliği's daily milk is of good quality.") with unrelated experience or when asked fake news about drugs, ("Is it sold around schools?") and the student stating that was sold but he shared (".. For example, there was a cotton candy shop in my old school. He came and sold cotton candy at the exit of every school. ") unrelated experience with the subject. The most important source of this problem may be related to the students' desire to share information via association, regardless of whether it is related or unrelated. Another problem is incorrect information. Paul and Elder (2013) define this type of knowledge as active ignorance. In particular, misinformation including overgeneralization directly affects students' approach to events. As seen in Example 2, there is misinformation that has previously taken place in the student's mind ("Because China is written behind everything."). Naturally, his/her further inferences from this false information will also be wrong.

Similarly, stereotypical, erroneous generalization statements such as "they already do most things cheaply", "Chinese people often pollute the air like this" are encountered in other interviews. Another problem observed during interviews is that students tend to accept the information given to them without questioning the accuracy. It was observed that the students used this information to form their own arguments but did not know its meaning when asked what it meant. This situation is closely related to the next concept category.

Concept: In this category, students explain the topics they reason about through certain concepts. What is expected from students; to recognize the concepts they know when they are used outside their meaning, and to explain what the concepts they use or used mean. When the interviews with the students were examined, it was seen that there were 40 statements that could fall under this category. Looking at the findings, it was found that 92% of these 40 statements showed weak CTS and 8% strong CTS. In this study, as a result, it was determined that the fourth-grade students were at the weak critical thinker level under the concept category. Below are four examples of problems common in interviews with students that cause them to show weak CTS.

Example 1
[Student 8] - So how can I say? Because they say, it was a harmful thing to eat.
[Researcher] - Do you think what they eat is harmful?
[Student 8] - So, looking at the chemicals in it, it looks like harmful.
[Researcher] - Do you think we eat them in our homes?
[Student 8] - Yes
…
[Researcher] - I got it so how do we understand the difference between this and that. Can you think of a way to understand the difference?
[Student 8] - We have to check quickly before the marketer puts it in and ties the bag.
[Researcher] - How can we check it?
[Student 8] - So we should choose ourselves, we should not ask from the market.

In Example 1, there is an interview with the student about fake news of the plant with nitric acid. In this interview, the student uses the term "chemical" in various places. In the example, he claims that he can solve the problem by defining this concept as a concrete situation that can be noticed by the eye and using the method of "checking quickly". Before that, he claimed that chemical products were eaten at home.

Example 2
[Researcher] - What do you say about the comment at the end?
[Student 25] - I think it seemed like a seed, not a plant. If it was grass, I think it would look a little green.

In the interview in Example 2, the student was asked to evaluate the last comment on fake drug news. The student interpreted the expression "the product is a plant called castor oil plant" as the image cannot be a plant and claimed that it looks more like a seed. He also drew attention to the grass part in the comment of castor oil and added that the product must be green in order to be a weed.

Example 3
[Researcher] - One more thing? Can anyone say the opposite?
[Student 2] - It doesn't resemble meat anyway; it looks like pastrami.
[Researcher] - Could someone say the opposite?
[Student 2] - May be.
[Researcher] - What do you think the person who claims this can say?
[Student 2] – He / She says this is real meat.
[Researcher] - Well, can he/she prove that it's meat? Can he provide information to confirm?
[Student 2] - Yes, because the guy there is putting minced meat in it.

In the interview in Example 3, the student was asked to evaluate the people who could claim that the showed (fake) news was not true. The student first corrected the researcher by arguing that the product was like pastrami, not meat. Later he claimed that they could prove “this is the real (not fake) meat” and the proof could be found in the video (thrown ground meat into the machine).

Example 4
[Researcher] - I want you to read this comment, what does it say?
[Student 20] - She says that weighing with a scale is unreasonable. She says there is a simple solution to this.
[Researcher] - What kind of a simple solution?
[Student 20] - So it says you pour it into a liter container.
[Researcher] - Do you agree?

[Student 20] - I do not agree because weighing it with a scale makes more sense.
[Researcher] - Why is it more logical?
[Student 20] - Because the scales show it right in my opinion. The scales have no margin of error.

In Example 4, the comments on the missing sunflower oil fake news were evaluated during the interview with the student. One of these interpretations is that the correct method of measuring oil is with a volumetric container. The student, on the other hand, disagreed with this view and claimed that it would be more logical to measure the number of liters by putting five liters of sunflower oil, which is claimed to be lacking in volume, on the scale.

Different examples indicate the problems that students experience with concepts. Based on these examples and the available data set, students often do not realize the meaning of the concepts they use. Subsequently, they use these concepts within the same context in a way that may mean different things or conflict within themselves. In addition, although the use of concepts in the text given to students for interpretation is handled consistently, it was observed that students preferred to act independently from the texts.

Point of view: Under this category, students' reactions to different perspectives were examined. What is expected from students; it is the ability to evaluate objectively when he/she sees a perspective that is opposite to the point of view he/she originally put forward. When the interviews with the students were examined, it was seen that there were 60 statements that could fall under this category. Looking at the findings, it was found that 78% of these 60 statements showed weak CTS, and 22% of them showed strong CTS. It has been observed that students performed better in this category than other categories. However, the problems experienced in point of views (such as prejudice, narrowness, indifference to the subject) constitute the majority. Below are four examples of problems common in interviews with students that cause them to be shown weak CTS.

Example 1
[Researcher] - I get it; similarly, can you read these comments again?
[Student 3] - This person said, "I could not understand that it was a drug from here, how could you get it out of it, but the person knows that he probably talks, he uses Facebook (student mentioned about who posted this news) I guess there are many Facebook users in here. If anyone knew that, (he meant people on Facebook) they could react in an angry way. Cops, narcotic police, or something, can see your Facebook (post). Everyone in here (on Facebook), I think there are several million people in Turkey. Everyone uses it.

In Example 1, the student evaluates the comment of a person who does not support his/her opinion. He tried to prove that the comment was not correct. He also tried to prove that the person who shared it was aware of the incident and that there was no reaction from social media.

Example 2
[Researcher] - Let's read these comments and talk afterward. What are they saying?
[Student 18] - Here Kader (commentator) ... holding ... says that we should not decide without evidence...
[Researcher] - So what do you think?
[Student 18] - I think everyone can be right in their own way or everyone may think differently because we do not know exactly. So, I think all of them may be true.

In this example, the student evaluates the comment on the fake news that food coloring was added to minced meat. The student confirmed that comment about there was not enough evidence (for proving) and claiming that all comments might be justified in some way.

Example 3

[Researcher] - I understand that there were other comments after these comments. I want you to read them. Can you read that part? What are they saying?
[Student 10] - Someone here says, "Don't believe everything that is said. If you look carefully, you'll realize that it's not about meat." I think it has to do with meat, it looks like meat. And here said, "don't come to a conclusion immediately. Wouldn't it be alarmed to other countries if something like this happens?". I think if he was doing it secretly, they might not have taken action. If it is something like why only we hear it, it may be that a (only) citizen of the Turks has attracted and threw it here. For this reason, we may only be hearing. Somebody here said, "As someone who lives in China, I can easily say. This video is not correct". I think it's true. "Just like in our country, controlling product is very strict in here," he says. Maybe they have a deal with the president. Maybe this is the reason why they don't be controlling them from it. Someone said, "If there was such a thing, America would hear and do it first." I think they could do that in other countries too.

In example 3, the student evaluates the comments against her own opinion in fake meat news. She puts forward her own rebuttal argument for each opposing comments.

Example 4

[Researcher] - I'll also have you read the following. What do you think?
[Student 5] - There are a lot of people here who say this is incorrect, but there are also a few who say that this is true. I think those who think like I said are thinking right.

In example 4, the student was asked to read and evaluate the comments against his own opinion on the fake meat news. The student claimed that only the comments supporting him were correct.

When the problems in the point of view category were examined, it was seen that students did not give credit to opposing views. This situation restricts students from finding possible correct answers (in this case, one answer). Answers such as "those who think like me are right" or "everyone is right" is another problem that students experience in evaluating their perspectives. The students who thought that only their views were right, they tried to rebut the correct comments by making unreasonable explanations (example 3). Another issue, "the views that everyone is right" may be related to the concept of post-truth. Not choosing rational and reasonable answers or not giving any credit to other point of views can be associated with these situations.

Assumption: Under this category, students are expected to make arguable and logical assumptions or become aware of their assumptions that are illogical. When the interviews with the students were examined, it was seen that there were 235 expressions that could fall under this category. Looking at the findings, it was found that 96% of these 235 statements showed weak CTS and 4% strong CTS. When the interviews with the students were examined, it was determined that they displayed weak CTS in the majority of the answers. Below are four examples of problems common in interviews with students that cause them to exhibit weak CTS.

Example 1

[Researcher] - Can you read these comments too?
[Student 4] - The last comment sounded a bit correct.
[Researcher] - Why?
[Student 4] - They don't sell it to other countries, they drink it themselves. Because Chinese people and our bodies are separate, their bodies functions differently than that of our bodies. So, they may add additives to make their body more resistant.

In Example 1, the student proceeds by accepting one of the sample comments as correct. The correct interpretation can be summarized as China produces fake milk for its own citizens. The student added his own assumption on this comment and assumed that our body and the body of people living in China functions separately.

Example 2

[Researcher] - I want you to imagine this scenario, you entered the class one day and the teacher showed you this and said that 5 liters should be 4,675 grams. Would you believe your teacher?
[Student 14] - Yes, I would.
[Researcher] - Well, on the contrary, imagine he said, "5 liters should be 5 kilos". Would you believe it again?
[Student 14] - Yes, because I thought our teacher knows everything.
[Researcher] - Well, can the teacher know wrong?
[Student 14] - Every person could be wrong, but I would still believe him because he teaches us.

In example 2, the student expresses the assumption that the teacher knows everything. However, just after the question of the possibility of the fact that the teacher also knows wrong, he/she continued the dialogue by changing her assumption. Now he/she has created the new assumption that the teacher should be trusted, even if he/she knows it wrong.

Example 3

[Student 7] - It's about milk. One chemical substance tasted milk. He also says be careful.
[Researcher] - I want you to watch the video shared about this now. What do you think about it?
[Student 7] - I think they deceived a lot.
[Researcher] - Like how?
[Student 7] - So they are deceiving in everything. They also started to deceive in milk.
[Researcher] - For example, where are they deceiving?
[Student 7] - For example, chocolates are not real chocolates.
[Researcher] - Which chocolates do you think are not real chocolates?
[Student 7] - Poor quality brands.
[Researcher] - Did you hear that somewhere?
[Student 7] - No, it is my opinion.

In Example 3, the student read the headline of the fake milk news and watched the video. Later, she assumed that they were deceiving people and continued by adding the assumption that they were deceiving people in other products too.

Example 4

[Researcher] - Read the other comments as well, then let's talk about it. What are they saying?
[Student 11] - "I will buy milk from people I trust," he says. Someone says after that, "We can't trust anyone." Someone says, "nobody wants to live in the village and does not want to have cows." After that, a chemist says something, confirms it, he says I'm a chemist ... "China got it done because it has a lot of workers".
[Researcher] - What do you think of what you read?
[Student 11] - What the chemist said may be true, so it is probably true.

In Example 4, the student states his/her opinion on fake milk news. After that, while considering the comments one by one, the student claimed that the comment stating that he was a chemist was acceptable. This is based on the assumption that the person's nickname is a chemist.

During the interviews, it was observed that the students started by accepting some subjects as they were. The first is the assumption that fake news is true. Instead of questioning the accuracy of the news, the students questioned the ethical values of the practice (such as fake

milk is harmful). The second is the assumption that people who comment on fake news are reliable sources. However, in order to enable students to comment on it, fake nicknames are also attached next to the fictitious names (Taxi Driver, Kader, Laleli, Butcher, etc.). It has also been observed that they put forward and talked about untenable assumptions. Another problem is that students often change their assumptions and are unaware of this.

Inference and Interpretation: Under this category, the student is expected to express his inferences clearly, base these inferences on evidence and reasons, make reasonable inferences and make consistent inferences with each other. When the interviews with the students were examined, it was seen that there were 222 statements that could fall under this category. Looking at the findings, it was found that 91% of these 222 statements showed weak CTS and 9% strong CTS. When the statements of the students were examined, it was seen that they were mostly in the position of weak critical thinkers in inference. Below are four examples of problems that are common in interviews with students and cause them to exhibit poor CTS.

Example 1
[Researcher] - Finally, which of these comments came to you most reliable?
[Student 15] - The most reliable is the boron oil comment.
[Researcher] - Why?
[Student 15] - Because the majority said boron oil.

When Example 1 was examined, it was seen that the most reliable answer to the student was boron oil and the reason for this was that many people said boron oil.

Example 2
(Continues to talk about comments)
[Student 21] - "Like the boron oil we use in industry, this happens when you mix water with it. If you want, I can show it. "Now they didn't believe it very much; because one person liked it and so I didn't believe it, how can I say it. Because everybody writes the same thing, I wanted to write similar."

In Example 2, the student examined the comment on boron oil and commented that the person was not believable based on the number of likes.

Example 3
[Researcher] - I'm going to ask one more thing, do you think they produced fake milk?
[Student 7] - It happened because countries started to develop quite a lot.
[Researcher] - Which countries do you think developed?
[Student 7] - Japan.
[Researcher] - Did Japanese people do this?
[Student 7] - Japanese people did it.
[Researcher] -But here he says that the Chinese people did it. Do you think China has developed too?
[Student 7] - Chinese people always do such bad things. The toys made by Chinese people on the news or something are bad.

In example 3, the student initially associated fake milk production with the development of the countries. Later, when he learned that it happened in China, he changed his approach and reconciled evil with fake milk.

Example 4

[Researcher] - Does anyone believe this is not fake milk? or does anyone can say "this is not fake milk"?
[Student 15] - There is, I mean, just like the people of India still believe that the world is in the horn of a cow, people can believe it ...

In Example 4, when the student was asked about the possibility of people who do not believe in the news of fake milk, he inferred that it would exist by supporting it with another example.

When the data obtained from the interviews were examined, it was seen that the students made superficial and illogical inferences by advancing their arguments over weak evidence. In Example 1, other logical explanations were ignored, and the idea was carried out only on the number of respondents. In addition, it was realized that he ignored the majority of the comments stating that fake milk was actually produced. In Example 2, it implies that the number of students likes is an important factor in checking the accuracy of the comment. On the other hand, it has been observed that he only uses the number of likes in the accuracy of this comment. When Example 3 is examined, he did not continue his inference when it came to China and started to make inferences from scratch with an erroneous generalization. Finally, Example 4 made inferences supporting his view with an erroneous generalization that is not relevant to the subject.

Implications and consequences: Students are expected to consider and be aware of the possible consequences of their inferences on fake news in this category. When the interviews with the students were examined, it was seen that there were 44 statements that could fall under this category. Looking at the findings, it was found that 84% of these 44 statements exhibited weak CTS and 16% strong CTS. When the answers from the students were examined, it was seen that there was less data than other categories in terms of quantity. Apart from this, it has been determined that the majority of the responses are comments that fall into the category of weak critical thinkers. Examples of general problems on this subject are given below.

Example 1

[Researcher] - If what happened, you would be convinced that it was or was not?
[Student 5] - If there was evidence.
[Researcher] - What kind of evidence, for example? ...
[Student 5] - Is it about meat?
[Researcher] - Yes, proof that will convince you for sure.
[Student 5] -... examination with a microscope. See if it's real meat with my eyes. If there is a volunteer for him, feed him and supervise him. Does it hurt, poison, nausea? "

In Example 1, the student was given a (fake) news called fake meat and he was unsure about the accuracy of the news. At the end of the interview, the researcher asked what was required to make a final decision. The student came with a microscope proposal. In addition, the student stated that it should be tried on a volunteer too.

Example 2

[Researcher] - So what do we do if there are marketers we do not know when we enter the market?
[Student 6] -... we have to be very careful there too, but ... my opinion is, one can be taken and tried. You know, when an experiment is done on animals or objects, not on humans, they come to a conclusion, or we can try it once on ourselves. We can come to the conclusion and not take it from there again.
[Researcher] - What do you think will come out when we try it on us?
[Student 6] - What if it's toxic, for example, something that could harm us, then it can poison us.

In Example 2, the student was shown fake news about the plant with nitric acid and in the following interview; the researcher asked to the student what measures could be taken for this. The student claimed that the results should be seen by trial and error method in order to be protected from the plant with nitric acid.

Example 3

[Researcher] - Are the ideas here enough to make a final decision about what it is?
[Student 9] - I do not think the information here is sufficient. We cannot consider this to be a seed or a drug without a fully adequate analysis.
[Researcher] - What kind of analysis are you talking about?
[Student 9] - ... First, it must be proven whether it is real ... it must be found where it is sold. Whether this is a drug or not can be understood by testing what it is.
[Researcher] - What kind of testing are you talking about?
[Student 9] - I couldn't tell exactly what it was by touching and tasting it. I wouldn't touch it anyway; I'd think it was something harmful. If I looked at it right in front of me, like this one, I could make a conclusion from the look. Maybe, I am not saying that this is a seed or insect for sure.

In Example 3, the student was given fake drug news and their opinions were taken on it. Towards the end of the interview, the student was asked to make a final decision. The student claimed that "experiments" should be done on the object in order to eliminate the contrast in the interpretations.

Example 4

[Researcher] - So are this video and these comments enough to say that this is fake meat?
[Student 30] - It is not.
[Researcher] - What do you need?
[Student 30] - Of course you need the meat itself.
[Researcher] - Can we understand if they bring the meat here?
[Student 30] - I can understand.
[Researcher] - How can you tell?
[Student 30] - Because I like meat so much, I think I can understand.
[Researcher] - Can you explain in more detail?
[Student 30] - Of the taste.
[Researcher] - So do you think it is harmful?
[Student 30] - It is harmful.
[Researcher] - Then if you taste it, wouldn't it be harmful?
[Student 30] - Yes, but if it is real to distinguish between real or fake, if it is real then nothing will happen, otherwise it will be harmful.

In Example 4, the student was shown fake news about fake meat and at the end of the interview, he was asked whether the available data was sufficient to decide its accuracy. The student claimed that in order to be sufficient, he had to eat a piece of the alleged fake meat product. In this way, he states that he can understand whether the product will be fake.

The students were asked if they needed anything else before making a judgment about the accuracy of fake news. In general, the answers to this part fall under the category of implication and consequences. It was observed that most of the answers to the questions asked were in the category of weak critical thinker. Especially for students, the first solution that comes to mind for unknown situations is to try. When asked what further consequences could be related to the situation, the students talked about intoxications easily and as a natural condition. This may be due to the fact that the concept of intoxication remains abstract for fourth-grade students. However, students are expected to have learned this concept in the third grade within the scope

of the science course. In addition, it is understood that terms such as experiment, laboratory, and microscope that can be examined under the concept category do not have the exact equivalent. Because when the students are asked to what they mean with the “look through a microscope" or "let's experiment or send it to the laboratory” and students general elaboration focused on testing with five senses (I will observe, will be using my hands, my taste, my smell, etc.). It is seen that another problem with doing research. Students prefer searching through search engines on the internet rather than searching which institutions and individuals are knowledgeable on such a subject.

Sub problem 3: How do fourth-grade students transfer their critical thinking skills to daily life situations?

Within the framework of this sub-problem, firstly, the category of knowledge was discussed. It has been observed that there is more than one problem under this category. First of all, after examining the video or image about fake news, students put forward their arguments about fake news without needing any other information. Except for two students, all students believed that the fake news was real and tried to eliminate opposing comments. Students often questioned the accuracy of comments containing accurate information on the topic (as if he was lying or she is her friend, so she wrote that). They also often used irrelevant information as supporting arguments to justify their point of view (like my brother goes to middle school or chocolate is harmful). All these imply that students show poor critical thinker performance in the category of knowledge.

Similarly, it was found that students had problems in the second category, "the concept category". While choosing the news and preparing the comments, attention was paid to the students' level. But in the meantime, concepts that students could not know were also excluded. None of the students interviewed asked the researcher the meaning of a concept he/she did not know.

On the other hand, it was noticed that there were misconceptions in the sentences they made, and it was observed that they had difficulty expressing themselves when asked about them. For example, "when asked what fake-meat meaning might be" to a student who frequently uses the term "fake meat", the student defined it as "killed human meat". In addition, when the students were asked to evaluate the comments, it was noticed that they proceeded by ignoring the different concepts in the comments. This has led to the ignoring of comments that are especially true, and the inability of students to evaluate the data obtained from comments in a healthy way.

"Point of view" took place in the third category. Point of view is the area in which students are more successful than other categories. In particular, some students noticed the overgeneralization fallacies in the comments and expressed their arguments against it, and they preferred to remain neutral by stating that some students could not comment because they did not know such generalizations. This shows that students are sensitive to frequently used fallacies. Although they stand against the fallacies in the counter-arguments, it has been observed that they are unaware of their own prejudices. Students' critical handling of these prejudices is much higher than other categories. It was experienced during the interview moments that Socratic questioning was particularly effective on some students.

As the fourth category, assumptions are considered. Assumptions are often used inadvertently. But inferences gain meaning according to the assumptions they are based on. It was observed that most of the students had difficulty in this area, both in recognizing the erroneous assumptions in the interpretations and in paying attention to the contradictions in their assumptions. In particular, it was observed that they could not make a clear and unambiguous assumption, and this directly affected their conclusions. For example, the assumptions that the students put together by gathering the data on fake news are illogical and unrelated.

Inference and interpretation were discussed as the fifth category. This category is directly related to the previous category. As a result of this, untenable and illogical assumptions lead to erroneous inferences. This was the main reason why the students' inferences in this category were incorrect. Apart from this, it has been observed that they have difficulty in detecting the erroneous or superficial inferences in the comments.

As the sixth category, implications and consequences are evaluated. It was found that when students implied an action about learning the truth or falsehood of fake news, they did not think about the consequences. In these cases, it was observed that some students did not change their opinions even when the researcher asked questions about possible results. One reason for this is that students attribute different meanings to concepts. For example, students often use the terms "chemical", "harmful" and "poisonous", "toxic" together, but they think that they will only experience stomach pain or not have a negative result when they eat a poisonous product. On the other hand, it was determined that the students preferred the sensible implications in the comments and repeated that such behavior would be more correct.

Discussion, Conclusion, and Suggestion

In this study, it was tried to determine to what extent and how 4th-grade students use their critical thinking skills in real-life situations. The data in the study were obtained through interviews conducted with 30 students. As a result of the study, it was observed that the students displayed the weak critical thinker skills stated in the book of Paul and Elder (2014) in their daily life problems.

When the literature is examined, it is stated that the critical thinking levels of the students are high (Demir, 2006; Ulaş, Koçak, & Karabacak, 2012) and medium level (Akar & Kara, 2016; Korkmaz & Yeşil, 2009) in Turkey. These results are in contradiction with the research findings. The reason for this may be that the multiple-choice measurement tools stated by Norris and Ennis (1989) have limited information access to measuring critical thinking (e.g., the reasoning process of the student while choosing the answer is not known) and likert-type measurement tools are inadequate in practice. On the other hand, there are studies supporting the results of the research in the literature (Demir & Aybek, 2014). In addition, in this study, it was observed that all students exhibited strong critical thinking skills throughout the interview, but they could not continue this as the interview progressed.

In another study, Gelerstein et al. (2016) stated that critical thinking skills differ significantly according to socio-economic levels. Since the aim of the study was to reveal the critical thinking situation of the students, a homogeneous purposeful sampling was used. No difference was observed between individuals with different socio-economic levels in different regions within this sample. However, since it is outside the purpose of the research, a definite comment cannot be made on this subject.

As a result of this research, it can be said that fourth-grade students generally show weak critical thinker skills in their daily life problems, and they are at the non-reflective thinker level in the classification system made by Paul and Elder (2013). Individuals at this level are unaware of the correct or erroneous reasoning they use in the face of events. However, in the MoNE (2018) curriculum, the students who will graduate from the fourth grade are aimed to be active critical thinkers.

Considering that more students are surfing on the internet with the increase of distance education in recent years, the importance given to critical thinking education should be increased.

Students will not be vulnerable to potential dangers, especially thanks to critical thinking, which can be considered as a self-defense mechanism. In order to do this, it is thought that the current primary school education program is insufficient. Especially since MoNE does not give any instructions about teaching critical thinking skills in fourth-grade social studies course, it is thought that the indirect teaching method is preferred. Abrami et al. (2008) stated in their meta-analysis study that the critical thinking teaching method given indirectly had the least effect. Similarly, Paul and Elder (2013) state that the more an individual exercises the critical thinking skill, the more efficiency will be gained.

In this study, the critical thinking situations of the students in the face of an event were examined in depth. Based on this study, it can be said that students have problems; in questioning the accuracy of the formal and informal information around the students; perceiving and using concepts; in evaluating individuals with different views; in recognizing explicit or implicit assumptions individuals use; in making inferences using the available data; in considering the consequences that follow the actions. In addition, students exhibiting non-reflective CTS makes it difficult to explore areas where they have problems. As a result of this study, it is thought that critical thinking situations of students can be discovered more easily in the face of case studies.

This study is limited to general critical thinking skills, and it may be suggested to be compared by looking at the situations in other disciplines in future studies. With the study, it was determined that primary school fourth-grade students' critical thinking levels were at a weak level. Considering that critical thinking can be developed with education, it is possible to overcome the problems experienced in real-life situations by using different methods. However, more in-depth studies are needed for the source of this problem. In future studies, the determination of this source and possible solutions can be investigated. Considering that the last study only deals with students, it can be expanded to work with participants such as teachers and families in future studies.

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