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Developing Critical Thinking Skills in Elementary School Students Through Foreign Language Education: An Action Research

Elif Sarıcan[1], Ecenur Büşra GÜNEŞ[2]

[1] Marmara University, Ataturk Faculty of Education, Elementary Education, Department of Elementary Teacher Education, ORCID ID: 0000-0003-0264-3950
[2] Akasya College, English Language Teacher, ORCID ID: 0000-0003-0574-0043

Abstract
People constantly practice the act of thinking. They may not think about everything, yet they certainly think of something and make decisions. Critical thinking is a sort of reflective thinking. It is controlled and aimed at perfect thinking. It enables the self-realization of individuals in social life. Therefore, it is important to develop critical thinking at school stages and early ages. The purpose of this research was to investigate "the effect of foreign language learning activities on critical thinking skills of 4th-grade students". To achieve this purpose, researchers tried to answer these questions: (1) What is the effect of critical thinking activities on students' critical thinking? (2) What is the effect of critical thinking activities on students' personal definitions of critical thinking and critical thinker? (3) What is the effect of critical thinking activities on students' social skills? The method of this research is action research which is considered highly important for educational sciences. In the course of this research, activities for developing critical thinking skills were implemented to 4th grade students. 25 4th grade private elementary school students participated in the research. Researchers used 13-question "Critical Thinking Skill Open-ended Questionnaire" to collect data. The answers given to the open-ended questionnaire before and after the activities were analyzed using content analysis, and themes and codes were determined accordingly, thereby answers of the students are compared. It is noted that before implementation, most of the students did not have any idea about critical thinking or they thought critical thinking has a negative connotation; however, after implementation, they gained more positive and open-minded opinions about this term.

Keywords: Critical Thinking, Thinking Skills, Foreign Language Lessons

Introduction

Recent technological advances lead to many advantages. The most important one is "fast" and "multi-channeled" information flow. Constant information production, easy access to information and being able to spread the information quickly to large masses changed the social structure and the needs of society. Producing information is now an indicator of social power. Nevertheless, information production is related to the skill of

accurately filtering the information. In a world of constant information flow, people must filter the information before being certain about it. The most important competences expected from today's people are adapting to the rapidly changing order and making rational decisions. At this point, "higher-order thinking skills" are considered to be vital. People may not think about everything, but they always think of something. Reflective thinking is what we call as useful thinking (Fisher, 1995). Thinking is a constant activity that sometimes occurs wittingly but mostly unwittingly. People think on the bus, while walking, working, listening to music, daydreaming and especially while deciding, and every single act of people is an outcome of thinking. Humankind differs from other species with its ability to think, and tries to understand its own existence, and can shape its own future through the information obtained. (Akar & Kara, 2016, p. 1340). Within the context of this research, thinking was emphasized as systematic thinking. There are several different definitions of this type of thinking. For instance, while Çubukçu (2004) defines thinking process as transferring the surrounding phenomena and facts into symbols, Akar and Karaca (2016) defines thinking as intellectual activities that people perform while they seek a solution to the problem they encounter, and they underlined its importance during the process of managing, arranging, implementing of these activities. Essentially, the more our thinking skills develop, the better our ability to interpret, explain and judge by comparing our experiences gets. The process of thinking begins with asking. Because from a different perspective, thinking is feeling dissatisfaction as a result of experiences, benefiting from cognitive ways to overcome this dissatisfaction and proceeding from here (Gömleksiz and Kan, 2009). In the course of thinking, people use numerous abilities. These can be identified as reaching existing information, analyzing this information, evaluating analyzed information and producing new information as a result of this process (Güneş, 2012).

As it is understood from these definitions, main emphasis of thinking is on the fact that it is an "intellectual" process. As for the concept of skill, it can be defined as having information about a particular subject and performing on the basis of this information. Therefore, thinking can be accepted as a skill whereas thinking skills can be considered as having information about above mentioned cognitive processes and ability to practice this information in daily life. When Lipman (2003) defines thinking skills, he underlines that it is a long process which includes special and general abilities, making deductions and skills of comprehending irrelevant differences, inductive reasoning, finding systematic thinking whilst discussing different possibilities, problem-solving ability and removing the obstacles generated from these problems, evaluating and determining the criteria to evaluate (as cited in Tok & Sevinç, 2012, p. 68). Given these definitions, it can be concluded that thinking skills are multidirectional. Everyone can think; however, not everyone can have these skills and use them effectively. On the other hand, by its features, thinking skills can be later acquired and developed. Güneş (2012), states that thinking is associated with improving our standards of life and what we do in life, and she emphasizes that disorganized thoughts stand in one's way to success. Therefore, understanding and internalizing the thinking skills are important for not only one's education but also for one's self-realization in society, since people with undeveloped thinking skills may cause negative situations for the society. People need thinking skills to generate ideas about life and make decisions; what is more, these skills are the foundation of lifelong learning and achieving success (Mercer, Hockly, Stobart & Gales, 2019).

Adapting to the 21st century conditions is directly related to the development of thinking skills. Being one of these skills, critical thinking should not be considered as "disliking" and "negative commenting," which most people tend to interpret as. Critical thinking is not a negative and destructive way of thinking or an effort to find fault and condemn. Being in complete denial and refusing everything should not be understood while talking about critical thinking. Critical thinking is a systematic process including cognitive and rational assessment. It encourages people to develop their thinking structures by asking the right questions. Learning to think critically means (Fisher, 1995, p.65):
- Learning how to question, when to question and what questions to ask,
- Learning how to reason, when to use reasoning and what reasoning methods to use.

Cottrell (2017) defines critical thinking as a set of activities requiring reasoning. Helperm (2014) identifies critical thinking as "targeted thinking including making decisions, considering the possibilities, organizing the results and problem-solving" (as cited in Seah & Beencke, 2019, p. 3). Critical thinking is a disciplined and controlled way of thinking to achieve the perfect thought (Gök & Erdoğan, 2011), and through this complex

process, high-level cognitive thinking methods are required (Güven & Kürüm, 2006). According to the pioneers of the field - Paul, Elder and Bartell (1997), critical thinking is thinking with the help of evaluation skills and in line with making correct deductions to reveal the real value of something.

One of the founding fathers of the critical thinking movement in North America, Robert Ennis, has identified 12 aspects. There are given below, each with a related question that can help in the critical analysis of an idea (Fisher, 1995, pp. 68-69):

1. Grasping the meaning of a statement – is it meaningful?
2. Judging whether there is ambiguity in reasoning- is it clear?
3. Judging whether a statement contradict each other- is it consistent?
4. Judging whether a conclusion follows necessarily-is it logical?
5. Judging whether a statement is specific enough- is it precise?
6. Judging whether a statement applies a principle- is it following a rule?
7. Judging whether an observation statement is reliable – is it accurate?
8. Judging whether an inductive conclusion is warranted – is it justified?
9. Judging whether the problem has been identified – is it relevant?
10. Judging whether something is an assumption – is it taken for granted?
11. Judging whether a definition is adequate – is it well defined?
12. Judging whether a statement taken on authority is acceptable- is it true?

As it can be understood from the above-listed features, critical thinking is based on obtaining information through effective ways, analyzing and the ability to adapt to life (Özdemir, 2017).

People who grew up with critical thinking skills can look at things from different perspectives and question the accuracy of their opinions. If a person does not question the accuracy of the obtained information, research its resource and validity, and filter this information, s/he can get lost in information chaos (Söylemez, 2016, p. 672).

Critical thinking can be developed in people; for this reason, schools - one of the most important sources of our education, and teachers - the practitioners of education, play a vital role to enhance this skill in children. Critical thinking skill education should start at early ages and this skill should be activated constantly with different techniques. In today's world of the information society, teachers became the executives who also act as a guide to direct group studies, and consequently develop critical thinking skills (Balay, 2004). A teacher with these qualifications can apply questioning, reasoning and collaborative teaching activities apart from traditional teaching methods. Adults who grew up with these activities can reflect these skills to the society as well.

Conducted research on critical thinking presents the importance of development of these skills in early ages. Akar and Kara (2016) studied critical thinking skills of 4th grade students and examined this skill with different variables. Outcome of the research conducted with 261 4th grade students showed that students have a medium level of critical thinking skills. Korkmaz and Yeşil (2009) aimed with their research to determine students' level of critical thinking in accordance with their school levels. The participants were final year students of elementary, middle and high schools (4th, 8th and 12th grade). Data were collected with the California Critical Thinking Disposition Inventory. At the end of the research, it was seen that students in each group have a medium-level critical thinking and critical thinking disposition. Another finding of the research was middle school education has a negative impact on students' critical thinking level and disposition.

Gürdoğan (2010) investigated the prospective contribution of using current issues in 5th grade students' Social Sciences lessons to their critical thinking skills. The study was conducted by using mixed model, and quantitative data were collected by experiment with pretest-posttest control group. And for qualitative data, semi-structured interview questions were used. It is concluded from the research that while using current issues increases critical thinking skills such as analysis, evaluation, deduction and interpretation, it leads no change in explanation and self-regulation.

Akran and Babaoğlu (2019) studied the impact of the Allosteric Learning Model in English lessons on students' reflective thinking skills of critical thinking and problem-solving. The study was conducted with the participation of 5th grade students. Data were collected both quantitatively (pretest-posttest paired sample pattern) and qualitatively (case study pattern). According to the findings, posttest scores of experimental group students who practiced the Allosteric Learning Model had a significant positive difference compared to the pretest scores.

Ay and Akgöl (2008) aimed with their research to record the correlation between gender, age and grade variables on critical thinking skills. The study, conducted with 1379 student participants, concluded that female students have a higher level of critical thinking compared to male students, and critical thinking increases with age.

Kahraman (2008) investigated the relationship between critical thinking skills of 4th and 5th grade students and students' perception of teachers' in-class democratic attitude. The researcher worked with 344 4th and 5th grade students to determine the relationship between students' critical thinking levels and teachers' in-class democratic attitude. Data were collected with Cornell Critical Thinking Skill Test Form X and Democratic Classroom Management Scale. According to the result of this research, there was no significant relationship between students' critical thinking skill levels and students' perception of teacher's democratic attitude.

As it can be seen from the above-stated studies, existing studies in this field with elementary students are mostly survey research conducted to determine disposition and attitude. Whereas, there are also experimental research studies conducted with the aim of increasing students' critical thinking levels by using a particular method. There isn't enough study that are conducted in accordance with the units and activities in textbooks and integrated with the lesson specifically. It is concluded from the literature review that studies with the aim of determining teacher candidates and teachers' critical thinking disposition are more in the field. Therefore, in this research, critical thinking skills enhancing activities were designed in foreign language lessons to develop 4th grade students' critical thinking skills, and consequent changes in their critical thinking skills were observed.

The aim of this research was "determining the effects of foreign language teaching activities on 4th grade students' critical thinking skills". With this aim in mind, these questions were selected to be answered; (1) What is the effect of critical thinking activities on students' critical thinking? (2) What is the effect of critical thinking activities on students' personal definitions of critical thinking and critical thinker? (3) What is the effect of critical thinking activities on students' social skills?

Method

Model

Action research, a qualitative research method, was used in this research. Action research is very important in educational sciences as it acts as a bridge between theory and practice (Johnson, 2002). Action research is conducted by professional researchers. Participants are selected from the parties of the determined problem. Action research aims to establish precautions to fix the situation through critical evaluation of practices. (Karasar, 2003). Within the context of educational research, Johnson (2014) stated that action research process is consisted of these stages: determining a problem or a study subject, planning for data collection, collecting data, analyzing and organizing data, reporting the data, presenting judgement and suggestion, making action plan, implementing and evaluating this action plan. McNiff and Whitehead (2006) list these stages as follows: realizing the problem, defining the problem, thinking of possible solutions, testing these solutions, monitoring the action while collecting data to observe the changes, evaluating the development by generating procedures to make judgements about the change. As it is noted by Kemmis and McTaggart and Nixon (2013) and Berg (2001) in the body of literature that even though there are various ways of planning or classification in action research, basic steps of action research are similar. Pelton gathered these similarities of action research in five basic steps (Pelton, 2010):

Step 1: Issue identification, Step 2: Data collection, Step 3: Action Planning, Step 4: Plan activation, Step 5: Outcome assessment. In conclusion, action research starts with identifying an issue or a format to be examined during the process of practice. Any bothering situation for the practitioner in practice environment (a classroom or organization), process to be developed, a new approach to be tried are potential resources for action research. Pelton's five basic steps were followed in this research.

Study Group

The study group consisted of 25 4th grade students who attended a private school in 2019-2020 school year. There were 12 girls and 13 boys. One of them is 8, 18 of them are 9 and the rest are 10 years old. In determining this group, the convenience sampling method was applied. In this method, because of the limitations due to some factors (time, work force, etc.), the sampling is chosen from the participants who are reachable and available for applications (Fraenkel, Wallen, & Hyun, 2011). In the convenience sampling method, the researcher starts from the participants who can be reached easily and tries to reach the sampling number in the goal (Büyüköztürk et al., 2008).

Data Collection Tools

Researchers prepared an open-ended questionnaire to use before and after implementation. Literature review was conducted and critical thinking measurements accepted by the body of literature were scanned before preparing the open-ended questionnaire (Kökdemir, 2003; Valenzuela, Nieto and Saiz, 2011; Akın, Hamedoğlu, Sarıçam, et al., 2013; Sarıgöz, 2014; Semerci, 2016). In line with the items of reviewed measurements and critical thinking skill competences, 15 open-ended questions were written. Questions were edited in accordance with the comments of 4 professionals in Educational Sciences and English Language Teaching, and 13-question "Critical Thinking Skill Open-ended Questionnaire" took its final shape.

Action Process and Applications

1. Issue Identification

Pelton (2010) considers the first step as the discovery of limitless possibilities a researcher can identify and examine. The first researcher of this study works as a teacher of English at a private school in 2019-2020 school year. The researcher instructs 4th grade students and provides English lessons. The researcher also has a 3-year experience in teaching foreign language to children. Throughout the lessons she provided in a school year, she monitored students' behaviors and inspected their thinking skills. As a result of her investigation, she concluded that 4th grade students need to improve their thinking skills, especially critical thinking. She intended to search students' knowledge of critical thinking, examine their emotions towards this topic and see the eventual change if students gain awareness on this subject. She also wanted to see the prospective contribution of activities carried out in English lessons - researcher's own branch - to students' 21st-century skills. Therefore, she decided to search this subject with her instructor and conduct a research with her students.

2. Data Collection

Collecting data about the research topic is a vital part of action research. It begins in the initial stages of the research and it needs to be elaborated through the entire process (Pelton, 2010). Following issue identification, researchers consulted subject area experts. After the consultation, researchers firstly scanned the previous studies and conducted a thorough literature review. Previous studies were read in detail to find out the activities used for specific age group and outcome of the research. Thus, researchers obtained wide range of data on their subject area.

3. Action Planning

Pelton defines this stage as planning according to the issue identified at the first step (2010). In this stage, researchers planned the action they would carry through the research. First, they decided how much time they had for the research and what kind of activities they could do in this time. They went through students' books and reviewed the specific topics to be covered for the duration of research. Activities to develop critical thinking

level were created in compliance with the course topic and these activities were revised after discussions. A detailed table was prepared to frame the planned events for the activities and prospective outcome. Moreover, open-ended questions were prepared to measure students' critical thinking levels, and "Critical Thinking Skill Open-ended Questionnaire" was formed after overviewing prepared questions.

4. Plan Activation

Fourth stage is described as plan activation in line with the data reviewed at previous steps (Pelton, 2010). In this stage of the study, action plan designated for 4 weeks was activated. Firstly, researchers handed the prepared questionnaire sheets to the students on 28 November 2019 and collected their answers. Following the questionnaire, they carried out critical thinking level increasing activities, prepared in compliance with the textbook used for English lessons, with children. Two units were picked from the syllabus and two weeks were set per unit. During the first week, students did "Thinking Balloons" vocabulary activity in groups. For this activity, students wrote vocabularies of the unit on sticky notes and put them in a box. Students were divided into 4 groups and walked to the board one by one and stood in front of everyone. Teacher picked a sticky note from the box and attached it to the student's forehead. Then teacher asked each group to come up with clues to help the standing student to find the vocabulary on his/her forehead. They had 3 minutes to work collaboratively and write down the answers. Activity of the next week was about water pollution. After reading the text titled "Dolphin Dreams" with students, the teacher asked students what they know about water pollution and to draw what it means to them. As a result of students' answers and drawings, they gave definitions of water pollution and prepared a mind map. Then, the teacher handed a blank page to each student and asked them to write a cause for water pollution and passing the page to the student sitting behind them. Later on, they discussed the written answers, and they watched videos about water pollution in English. For the next activity, students worked in groups of four to imagine themselves as different animals (such as a dolphin, a sea turtle etc.). They prepared a leaflet and presented it to their classmates. Activity for the third week was "Thinking Cubes." In this activity, after reading "The Lion and The Mouse" story, students were divided into groups of three. Each group rolled the dice and completed the exercise that comes up on the "Reading Think Dots" sheet, and made a group presentation. The final activity was about zoos. Students arranged the classroom in U shape, and set one end as "strongly agree" and the other as "strongly disagree". The middle part was for the ones who cannot decide. The teacher read 4 sentences and asked the students to move in accordance with their answers. The sentences were as follows:

1. Wild animal should be kept in zoos.
2. Wild animals should live in their natural habitats, in the nature.
3. Only place for a little kid to see wild animals is zoo.
4. Zoo animals are sad because they aren't in their natural habitats.

After moving in accordance with their ideas, students shared their opinions. As students shared their opinions, other students had the right to change where they sit in U-shaped arranged seats. At the end of all of these activities the pre-implementation questions were handed again on 19 December 2019 and students' answers were collected.

5. Outcome Assessment

At this stage, Pelton (2010) suggests assessing the outcome and develop different point of views. Acquired data from the students were analyzed in the last step of the research. Students' pre-implementation and post-implementation answers were scrutinized and compared. Researchers examined the changes and developments caused by implemented activities in students' perception of critical thinking, and in which ways it remained ineffective. Results were reported by making deductions according to the outcome of research, and the achievements and lacks of the research were discussed. It is concluded that 4 weeks is a limited time for the research; however, it enabled some positive changes in students' critical thinking in a such a limited time.

Data Analysis and Interpretation

Data were collected twice (one pre-implementation and one post-implementation) via "Critical Thinking Skill Open-ended Questionnaire" prepared by the researchers. Codes, such as S1, S2 were used for students' answers.

First, students' pre-implementation answers were analyzed using content analysis, and then themes and codes were determined accordingly. Same procedure was implemented for the post-implementation answers as well. Obtained themes and codes were reported through the instrument of tables. Some pre-implementation codes remained the same in post-implementation data as well, whereas some pre-implementation codes changed or new codes emerged after the implementation. Direct quotations from students' answers were used while analyzing the data.

Findings

Findings from the participants' pre-implementation and post-implementation answers to open-ended questions are presented in this chapter.

Findings from the question "What is the effect of critical thinking activities on students' critical thinking?"

Table 1: 4th Grade Students' State of Observing Their Environment

Theme	Codes	I. Implementation	II. Implementation
Whether students like observing their environment or not	Yes	24	23
	No	1	2
Total		**25**	**25**

While all of the students except one answered yes to the question "Do you like observing your environment?" before implementation, results after the implementation show that one student changed his/her idea and answered "I don't like." Students' reasons to observe their environment are given in Table 2.

Table 2: 4th Grade Students' Pre-implementation State of Observing Their Environment

Theme	Codes	I. Implementation
Students' pre-implementation reasons to like observing the environment	Feeling relaxed – calm	8
	Intrigued by	7
	Interested – attracted by	5
	Out of boredom	2
	Other	2
Total		**24**

It is concluded from the pre-implementation answers of students who like observing the nature that they mostly observe the environment to feel relaxed and calm. For this reason, most of the observer students' answers were centered around enjoying. On the other hand, student with code number S12 answered *"I ease myself by doing it. If I have some worries, I look around and relax.",* and implied that observing the environment helps him/her to let go of his/her worries. Students' answers showed that another major reason to like observing the environment is sense of wonder, followed by being interested by the surrounding objects, events and people, and killing boredom. Answers of three students didn't fit into any categories (e.g., student S25'answer *"I am scared that someone will approach from my back and kidnap me."*). Student S22's, who dislike observing the environment, answer "they get angry at me" was considered as really interesting.

Table 3: 4th Grade Students' Post-implementation State of Observing the Environment

Theme	Codes	II. Implementation
Students' post-implementation reasons to like observing the environment	Like – love	8
	Interested – attracted by	7
	Intrigued by	3
	Learning	3

	Out of boredom	2
Total		**23**

When we look at the post-implementation answers of 23 students, it was noticed that students observe their environment mostly because they like or love. For example, student S12 answered *"I like trees and people talking."* Second reason was centered around the fact that students find this action as intriguing, interesting and attractive. For instance, student S4's answer *"Sometimes I see new things like pink-and-yellow ladybug."* shows that it raises awareness and improves imagination. It was noticed that a new code "learning" emerged after implementation.

When pre-implementation and post-implementation answers are compared, first thing to be noticed is the fact that students became able to express themselves more clearly and met on a more common ground. It is also noted that the second common answer "being intrigued by" left its place to "being interested and attracted by." Thus, it can be stated that students went beyond the sense of wonder and observe their environment more and they were intrigued by the phenomena around them which raise awareness eventually. For example, student S1 changed his/her answer *"Even though I see them every day, I gaze upon them."* to *"Sometimes there can be new things."* after the implementation. It can be said that this student used to gaze upon and get relaxed while observing before implementation, yet student gained awareness after implementation and realized it is not always the same and there are different things as well. Another example is the answer of student S16. Before implementation, this student stated the reason of observing the nature as *"It makes me calm down.".* After implementation, same student answered the same question as *"Some people always stare at their phones and I watch them to find out how many people don't stare at their phones."* In this case, it can be pointed out that student is now more aware of people's behaviors, and s/he raised curiosity towards a common behavior among people and observe people who don't demonstrate this common behavior.

On the other hand, emergence of new post-implementation code "learning" is very significant. For example, student S21 changed his/her answer *"I am curious about the environment and I find it strange."* to *"I learn new things by observing everyone."* So, it can be seen that implementation enabled students to realize they can learn while observing the environment.

Table 4: Attitudes of People Around 4th Grade Students

Theme	Codes	I. Implementation	II. Implementation
Attitudes of people around students	Respectful	13	12
	Persistent	12	11
	Angry	11	5
	Listener	6	9
	Compromiser	2	4
Total		**44**	**41**

It is noticed that among the pre-implementation answers to the question "How do people around you react to the opinions they disagree?" the answers of "respectfully" and "persistently" stand out. In other words, most of the students observe both types of people around them. Additionally, a significant part of students encounters with people who get angry at the opinions they disagree. For example, student S5 implied that the surrounding people are not open to new or opposing ideas by giving the answer *"Usually they are angry because they think their ideas are better so they love their ideas.".* Student S23's answer *"They say 'I don't like it at all, my idea is the best, I think more wisely' but actually their ideas turn out be the worst."* can be given as another example for this case. Considering the given answers, it is seen that students are dissatisfied with this attitude and they don't approve it, in fact, they are offended by it, e.g., student S22's answer *"Some people respond angrily to me. Sometimes I feel hurt and sad.".*

When we look at post-implementation answers to the same question, the codes remained the same as in pre-implementation answers. However, there are some changes in the ranking. For example, there is a decrease in

the number of people with attitudes of "persistence" and "anger," which can be classified as negative attitudes. Therefore, it can be interpreted as students primarily became more mild-mannered towards surrounding people's attitudes, and secondarily they possessed a more moderate way of understanding the attitudes of these people. For example, student S8 changed his/her answer *"They don't accept easily."* to *"They show respect."* after implementation.

Table 5: 4th Grade Students' Attitudes Towards the Ideas They Disagree

Theme	Codes	I. Implementation	II. Implementation
Students' attitudes towards the opinions they disagree	Listening to the other person	17	13
	Getting angry	4	1
	Insisting on the truth of one's own opinion	3	1
	Showing respect	3	6
	Deciding mutually	3	1
	Don't insist on the truth of one's own opinion	2	4
	Telling one's opinion	2	1
	Having difficulties in accepting the opinion	1	4
	Expressing the dislike in opinion	1	1
	Not listening to the other person	1	0
	Wonder	1	0
	Persistence	1	0
	Presenting a new opinion	1	0
Total		**40**	**32**

Pre-implementation answers center mainly around listening to the other person. Considering the answers to this question, in parallel with the previous question, students who observe respectful and tolerant people around them answered correspondingly to the question about themselves. Some students also mentioned that they express their own opinions while listening to the others. For example, student S19 answered *"I listen to them. If the idea is very bad, I say no. I listen to their ideas too and we pick whichever idea is better."* One of the most given answers is getting angry at the person with an opposing opinion. This phenomenon can be related to the fact that students observe angry people around them, since the code of being angry is present in both pre-implementation and post-implementation tables.

Considering the answers to the question "How do you respond when you hear a different or unpleasant opinion? Do you listen to the other person or is your opinion always right?", answer of "I listen to the other person" stands out from post-implementation answers as well. The number of students giving this answer decreased after the implementation; however, it is noticed that these students expressed their attitude as "I behave respectfully" and "my ideas are not always right." Three of the students answered "I don't accept easily" and increased the rate of this answer.

It can be said that implementation caused a positive change in students' attitudes towards different and unpleasant ideas. For example, Table 5 shows that while the number of students who think their opinions are not always right was two before implementation, it increased to four after implementation. Likewise, while the number of students who show respect to other people's opinions was three before implementation, it increased to six after implementation. For example, student S4 answered *"When I hear a different opinion, I don't accept it easily. My opinion is always right."* before implementation, whereas the same student answered the same question after implementation as *"I don't accept so easily. My opinions sometimes change."*. It is noticed that student used to use certain statements like "always"; however, after implementation the student stated that opinions can change. Under these circumstances, it can be said that the implementation caused a positive change in students to accept new opinions. Similarly, before implementation, student S9 answered *"I am usually*

persistent. My opinion is always right.", and yet after implementation, same student re-expressed himself/herself as *"I listen to the other person and respond as a listener.".* It is considered that group activities and sharing opinions had an effect on student's change of mind. It is observed that after implementation, students expressed themselves more clearly and became able to explain the reasons behind their opinions. For example, student S11's pre-implementation answer was left half finished *"I listen to the other person because"* and s/he could not express himself/herself well. The same student expressed himself/herself and the reason behind his/her opinion better after implementation as*" It is not right because other's opinions may be good too."* Thus, the research is considered to be helpful in developing students' cause-and-effect relationship and improving their self-expression better. Nevertheless, the number of students who persist against an opinion increased from one to four after implementation. It is considered that the reason behind this situation is the fact that they like working individually better and they had disagreements during the group work activities.

Table 6: 4th Grade Students' Attitude Towards Changing Their Minds

Theme	Codes	I. Implementation	II. Implementation
Students' opinions on changing their minds	It is difficult to change my mind	10	8
	It is easy to change my mind	10	12
	It is sometimes easy sometimes not	5	5
Total		**25**	**25**

When student's pre-implementation answers to the question "Is changing your mind easy or difficult for you? Why?" are reviewed, it can be seen that there is a tie between the number of students answered "it is easy" and students answered "it is difficult." Students who say it is difficult to change their minds stated in general that they are used to an opinion and they cannot easily change it. For example, student S17 answered *"It is difficult because you cannot just give up on something.".* Similarly, student S21 answered *"Changing my mind is difficult for me as it is challenging and usually my opinions sound logical and correct."* Students think changing their minds is frightening, e.g., student S25's answer *"It is difficult, you get afraid to change your mind when you have an opinion."* Students who said it is easy to change their minds expressed that they like changes therefore, they can easily change their minds.

Post-implementation answers show that two students changed their answers and said now it is easy for them to change their minds. For example, before implementation student S16 answered *"It is difficult because I cannot be sure when it is my turn to tell my opinion so I stay quiet and I miss my turn."* Same student's post-implementation answer is *"Changing my mind is easy for me as I listen to other people's works."* Therefore, it can be interpreted as student possessed a clearer understanding on changing mind and group activities enabled him/her to listen to other's opinions, and improve his/her decision-making ability based on the opinions s/he listened.

In conclusion, it can be noted that although most of the students was able to change their minds easily and was not persistent about it before implementation, even at least few students changed answers and now they possess a positive attitude towards different opinions.

Table 7: 4th Grade Students' Pre-implementation Definition of Criticism

Theme	Codes	I. Implementation
Meaning of criticism to students before implementation	Insulting/talking down	8
	I don't know	7
	Speaking/commenting	6
	Researching	1
	Questioning	1

	Other	2
Total		**25**

When we look at pre-implementation answers to "What does criticism mean to you?" the most given answer is "insulting/talking down." Therefore, it can be interpreted as criticism has a negative meaning to students. For example, student S10 explains criticism as *"interrupting,"* and student S25 as *"gossiping."* Similarly, student S4 answered *"Telling someone 'hmm how ugly it is'."* On the other hand, seven students said that they don't know the meaning of criticism or they have never heard of it. Giving these, it is possible to say that more than half of the students either didn't have any idea of it or they defined it as a bad behavior. On the other hand, six students defined criticism as commenting, speaking about something.

Table 8: 4th Grade Students' Post-implementation Definitions of Criticism

Theme	Codes	II. Implementation
Meaning of criticism to students after implementation	Discussing	8
	Commenting	7
	Deciding	2
	Speaking	2
	Criticizing	2
	Questioning	1
	Suggesting an idea	1
	Listening	1
	Insulting	1
Total		**25**

When we look at post-implementation answers, we see a different table. First of all, there are new codes such as; "discussing, deciding, suggesting an idea and listening." This proves that implementation enabled students to define criticism and use different approaches while defining. In a nutshell, with the help of the activities, students now have an idea about the definition of criticism as there is no student answering "I don't know" to the question asked after the implementation. On the other hand, majority of the students coded criticism as discussing. For example, student S22 answered *"It means discussion not fight."*.

Considering the difference between before and after implementation, it can be seen that majority of the students used to attach a negative meaning to the concept; however, they get to know the concept through activities and they showed positive change towards criticism. For example, before implementation, student S9 defined it as *"Telling someone's secret to another person."*; whereas, after implementation this changed to *"Commenting."* Similarly, student S13 first defined it as *"Insulting"* and then changed it to *"People who always talk and have logic."*. Finally, student S19's answer is very intriguing as the answer *"Talking behind someone's back, mocking, insulting, laughing at them. Talking bad on somebody's outfit."* represents really negative statements towards criticism. Same student demonstrated a positive attitude after the implementation and answered *"Thinking about something, sorting out right and wrong."*.

Table 9: 4th Grade Students' Pre-implementation Opinions on the Accuracy of Information

Theme	Codes	I. Implementation
Students' pre-implementation attitude towards determining the accuracy of information	By doing research	5
	By thinking	4
	By seeing	3
	By questioning	3
	By experimenting	2
	By checking	1
	By making someone swear	1
	By analyzing	1
	By asking for proof	1
	By consulting other people	1

	I cannot determine	1
	Other	3
Total		**26**

When we review students' pre-implementation answers to the question "How do you determine the accuracy of information?" we see that there are many different codes and the most common one is by doing research. For example, student S15 *answered "I do research a lot. You think whether it is important or correct."* Thinking is the second most popular answer. It is seen that students prefer believing by seeing and asking for proof. Student S4's answer *"I ask them to show the information on a newspaper or TV. If they can show, I believe."* set a good example for this. One of the students had a different way to be certain of information. Student S20 gave the answer *"I make them swear to God. If they swear, I believe."*, and considered swearing as a method.

Table 10: 4th Grade Students' Post-implementation Opinions on the Accuracy of Information

Theme	Codes	II. Implementation
Students' post-implementation attitude towards determining the accuracy of information	By doing research	8
	By thinking	4
	By seeing	3
	By thinking	4
	By consulting other people	3
	By checking	2
	By making someone swear	1
	By observing	1
	By asking for proof	1
	By seeing	1
	By asking	1
	Other	2
Total		**24**

Students answered the same question after implementation; however, one of them didn't answer the question. The most popular answer remained as by doing research after implementation, and the number of students giving this answer increased by three. Thus, it can be said that activities implemented for four week helped students to find ways to reach information. For example, before implementation, student S7 said s/he cannot determine the accuracy of information, whereas, after implementation s/he said *"I search on the internet."* Similarly, student S6's pre-implementation answer is *"I can determine the accuracy of information better.",* which is not a clear answer and shows s/he doesn't have any idea about any method. However, the same student answered *"I think a little about it."* after implementation. Thus, we can say that this student now considers thinking as a way to obtain information. Moreover, student S2's answer *"By thinking and critical thinking."* is an example that s/he gained awareness about critical thinking and s/he believes that the accuracy of information can be questioned by critical thinking.

When we compare pre-implementation and post-implementation answers, there is a slight increase in number of students who answered consulting other people and checking. Students named people they generally trust in and their family members as examples for someone to consult. Finally, a new code "asking" emerged after implementation.

Findings from the question "What is the effect of critical thinking activities on students' personal definitions of critical thinking and critical thinker?"

Table 11: 4th Grade Students' Pre-implementation Opinions on Criticizing Someone

Theme	Codes	I. Implementation
Students' pre-implementation opinions on criticizing someone – Is it good or bad?	Bad	16
	Good	7
	I don't know	2
Total		**25**

When we look at students' pre-implementation answers to "Do you think criticizing is good? Why?", we can see that more than half of them think that criticizing is bad. Majority of the students explained the reason of it as criticizing makes people feel sad or hurt. For example, student S7 answered *"It isn't good because the person might get sad."* likewise student S20 answered *"I think it is bad as the person I'm criticizing may get sad."*. The reason why students think criticizing someone is good is because they associate it with honesty. For example, student S24's *answer "Yes, (it is good) as you learn the truth."*.

Table 12: 4th Grade Students' Post-implementation Opinions on Criticizing Someone

Theme	Codes	II. Implementation
Students' post-implementation opinions on criticizing someone – Is it good or bad?	Good	14
	Bad	8
	Sometimes good sometimes bad	1
	Other	2
Total		**25**

There is a big change between pre-implementation and post-implementation answers. After implementation, more than half of the students perceived criticizing with a positive emphasis. For example, student S3 changed his/her answer *"No, criticizing is not good because I don't talk behind people's backs."* to *"Sometimes it is good because you can say nice things."*. Similarly, student S21 used to think that criticizing is wrong and answered *"I think it is bad and shameful."*. Later on, same student answered the same question as *"I think criticizing is good as it means telling our opinion honestly."*. Therefore, codes in the table and examples of students' answers show that activities had an effect on reducing students' judgements and negative thoughts on criticizing. There were a few students who thought criticizing is good but had no reason before implementation. These students commented on the reasons of criticizing being a good thing and express their opinion better after implementation. Moreover, one student pointed out that criticizing has a positive side and it can be constructive. While this student used to think that criticizing might make someone sad, s/he then changed his/her answer to *"I think it is good because they can learn from their mistakes."*.

On the other hand, there are some students whose ideas changed to the exact opposite. For example, student S16 first answered *"It is good because we can talk right away if they find before me according to what I find."*, then changed his/her answer to *"I think criticizing is bad as it can make the other person sad."*.

Table 13: 4th Grade Students' Pre-implementation Opinions on Critical Thinking

Theme	Codes	I. Implementation
Students' pre-implementation opinions on the definition of critical thinking	I don't know	7
	Thinking different	5
	Misbehaving	4
	Deciding	3
	Thinking bad about someone/something	2
	Criticizing	2
	Investigating	1
	Speaking	1
Total		**25**

When we look at the answers to the question "What do you think critical thinking means?" firstly, we see that most of them never heard of it before; therefore, they didn't know its meaning. Second popular answer is "thinking different." Students emphasized "thinking different than everyone else" in their answers. On the other hand, before implementation, there were some students who had negative opinions about critical thinking. Four of them accepted critical thinking as misbehaving whereas, two of them defined it as thinking bad. For example, student S8's answer *"Thinking bad about people."* and student S19's answer *"Critical thinking is talking cynically to someone."*.

Table 14: 4th Grade Students' Post-implementation Opinions on Critical Thinking

Theme	Codes	II. Implementation
Students' post-implementation opinion on the definition of critical thinking	Thinking positively	11
	Discussing	4
	Commenting	2
	Criticizing	2
	Searching – questioning	2
	Understanding	1
	Listening	1
	Sharing	1
	Thinking bad	1
	I don't know	1
	Other	1
Total		**27**

When we look at post-implementation answers, it is seen that there is a positive change and students used more varied verbs for defining the concept. Firstly, the number of students negatively defining critical thinking dropped down to one. Almost half of the students defined critical thinking as "positive thinking." For example, student S9 first answered *"It is a very bad way of thinking."*, then changed it to *"interpretational thinking."* Moreover, students built a connection between cognitive process requiring activities and critical thinking. For example, student S1's first answer was *"I don't know but I think it is the step right before criticizing."*. It is seen that student's knowledge of concept was not enough. However, the same student gave a more definite answer after implementation by saying *"I think it is thinking before criticizing."* On the other hand, even though the number of students without any knowledge about critical thinking was significantly high before implementation, this number dropped to one after implementation. Thus, it can be concluded that activities helped students to define the concept of critical thinking and change their negative perception. For example, student S21's first answer was *"I don't know"* later on s/he answered the same question as *" I think critical thinking is listening to each other.".*

Table 15: 4th Grade Students' Pre-implementation Opinions on Critical Thinkers and Their Characteristics

Theme	Codes	I. Implementation
Students' pre-implementation opinions on critical thinkers' character traits	Negative Character Traits (disrespectful, cynical, prejudiced, etc.)	9
	Positive Character Traits (smart, respectful, etc.)	6
	I don't know	3
	Talkative	1
	Cannot decide	1
	Other	2
Total		**22**

For the next question, students were asked to define critical thinkers and their characteristics. When we look at the pre-implementation table, we see that students assigned mostly negative and bad traits to critical thinkers. For example, student S4 answered *"I think critical thinker is someone who is bad, who steals and lies all the time but this is what 'I' think.".* On the other hand, the number of students who used positive traits in their definitions is rather high. For example, student S25 implies with his/her answer *"Critical behavior means being smart."* that critical thinkers are smart people. Three of the students stated that they don't know how critical thinkers are.

Table 16: 4th Grade Students' Post-implementation Opinions on Critical Thinkers and Their Characteristics

Theme	Codes	II. Implementation
Students' post-implementation opinions on critical thinkers' character traits	Positive Character Traits	8
	Negative Character Traits	5
	Thinker	2
	Talkative	2
	Critic	2
	Discussing	2
	I don't know	2
	Sharing	1
	Points out the mistakes	1
Total		**25**

When we look at students' post-implementation definitions of critical thinkers and their characteristics, it is seen that on the contrary to pre-implementation definitions, positive character traits are more than negative character traits. Therefore, we can say that with the help of activities, a good portion of students' negative attitude has been changed. For example, student S17's first answer was *"Prejudiced,"* then it changed completely to *"They don't offend people, they tolerate them.".* Similarly, student S10 answered *"Interrupts everyone, talks so much.",* and then same student changed his/her answer to *"Available to discuss."* However, there are some students who changed their answers in the opposite way. Student S7 changed his/her answer *"I think critical thinkers make really good comments."* to *"They can be either good or bad, for example, bad.",* and added negative trait into his/her definition. Nevertheless, in the general sense, activities enabled students to know critical thinkers better. Finally, students without any opinion changed their answers too. For example, before implementation student S1 said *"I don't know,"* and then s/he answered *"Critical thinkers are people who think before criticizing, and their traits are respectfulness and bluntness."* It is significant that student used "respectful" in his/her definition.

Findings from the question "What is the effect of critical thinking activities on students' social skills?"

Table 17: 4th Grade Students' Opinions on Group Work

Theme	Codes	I. Implementation	II. Implementation
Students' opinions on participation in group work	I like	20	21
	I don't like	4	2
	Sometimes	1	1
	Other	0	1
Total		**25**	**25**

Both pre-implementation and post-implementation answers can be seen in Table 17. Most of the students liked participating in group work. The number of students who like group work increased by one after implementation. Students' pre-implementation reasons to like group work were generally enjoying and having fun. For example, student S4 answered *"I like it because the result of it is big and beautiful.".* Student S5 gave a similar answer *"I like it so much because we get to be altogether and happy in group works."* On the other hand, there were students who liked individual work. For example, Student S13 *"I like working alone because everyone in the group has a different idea.".*

Pre-implementation and post-implementation reasons to like participating in group work have similarities. Moreover, the number of students who dislike participating in group work dropped down to two. For example, before implementation student S7 answered *"I like individual work better because there is only my idea.".* This shows that student was not open to different ideas other than himself/herself. Same student answered the same question after implementation as *"I like it because I am with people I love.".* Similarly, student S25's first answer was *"I don't like it because they don't listen to my idea.",* and then it changed to *"I like it because it is so fun.".* Thus, it can be said that some students used to have some prejudgments about group work but they changed it after implementation. Moreover, students expressed the reasons why they like group work. For example, student S14's first answer was only *"I like it.",* then she added *"I like it because I talk.".* Finally, there

were some students who changed their mind in an opposite direction. For example, student S4 answered *"I like it because the result of it is big and beautiful."*; however, after implementation same student answered *"I like it but this school makes me don't like it."*. This can be interpreted as there is a relationship between liking group work and imposing one's idea to someone. Students may have the tendency to like group work better when their ideas are accepted by others. It can be said that the student had negative experiences with his/her classmates during the activities, which lead the change in his/her answer.

Table 18: 4ᵗʰ Grade Students' Opinions on Fellow Group Members' Ideas

Theme	Codes	I. Implementation	II. Implementation
Students' opinion on fellow group members' ideas	Important	24	23
	Unimportant	1	1
	Sometimes	0	1
Total		**25**	**25**

When we look at students' answers to question "When you work as a group, are fellow group members' ideas important to you?", we see that almost every student answered "important" before implementation. Students' reasons for this answer are generally is because they care about their friends' opinions and they can create something when they work together. For example, student S3 answered *"Yes, it is important because it is a group work and I want to hear my friends' ideas."*, similarly, student S24 answered *"Yes, because I don't feel alone."*. It concludes that students generally care about other members' opinions at a group work. Only one student thought the opposite. This student answered *"No, I don't know it is important or not but I trust my own idea."* before implementation. After implementation, same student didn't change his/her mind and answered *"No because I can't defend my own opinion."*.

When we look at students' post-implementation answers, we see a decrease in the number of students who care about group members' opinions. Under these circumstances, it is not possible to say activities raised awareness for caring about group members' opinions. However, when we look at students' answers, we can say that activities helped students to realize the existence of other individuals too. For example, student S2's first answer was *"It is important because they are my friends and that's why it is important."*. After implementation, same student changed his/her answer to *"Yes, because they are opinions as well."* There are many examples for this case. There it is seen that before implementation, students used to care about others' opinions because they are friends and they love them, whereas after implementation, students began caring about because other members are individuals too and they can have different opinions.

Conclusion and Discussion

When we review the findings of the research, using critical thinking skill activities integrated to English lessons provided an increase in the level of students' critical thinking. It is noted that most of the students used to have no idea about critical thinking before implementation; however, they developed perception of critical thinking and they became able to make better comments on it after implementation. These results show similarities to Akar and Kara's (2016) research results. That research conducted with 4ᵗʰ grade students also concluded that students' critical thinking skills are at a medium level. It is possible to say that participant students of that research likewise used to have a low or medium level of critical thinking before implementation. Korkmaz and Yeşil's (2009) research conducted with every last grades of each school level similarly concluded that 4ᵗʰ grade students' critical thinking dispositions are at a medium level. This and previous research show that elementary school students have problems in gaining critical thinking skills; however, these problems can be overcome with implemented methods, and students' level of critical thinking can be increased. Akran and Babaoğlu's (2019) research concluded that when we include a method, which enables students to be independent (Allosteric Learning Model), students' critical thinking skills increase. These findings support the above-mentioned results.

It is also concluded that students made more positive and clear definitions of critical thinking and critical thinker after implementation. Most of the students stated that they didn't have any idea about the word "critical" before implementation. Additionally, students defined criticism, critical thinking and critical thinker generally with

negative words, and made statements to imply that these words are bad. However, after implementation, most of the students changed the negativity in their definitions and used more positive words and statements.

Another conclusion of this research is students are aware of the fact that surrounding people have respectful attitude towards opinions they disagree as well as have attitudes of anger and refusal. Considering the importance of social learning, students' attitudes towards different opinions are due to their surrounding role models.

According to results of the research, elementary school students do not have high level of critical thinking skills and ability to define concepts in regard with this subject; however, these ability and skill can be developed by activities. For this reason, it is considered that increasing the number of activities for elementary school students is necessary.

One of the most effective courses to develop critical thinking skills in students is English. Therefore, critical thinking activities should be added to syllabus of this course, and unit activities should be interlaced with critical thinking skills. Critical thinking skill activities can be combined especially with activities for acquiring speaking skills. Also, parents can do awareness raising activities to overcome students' negative attitude towards criticism, thus students can see the reflection of critical thinking in society.

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