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International Journal of Curriculum and Instruction 13(3) (2021) 2789-2812

IJCI
International Journal of Curriculum and Instruction

The effect of social skills-based activities on primary school students' critical thinking and empathic tendencies

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Abstract

This study aimed to determine the effect of activities conducted based on social skills on primary school students' critical thinking and empathic tendencies. In the research, a quasi-experimental design with a pretest-posttest experiment-control group (one experimental and two control groups), which is one of the quantitative research methods, was used. Critical Thinking Perception Scale and KA-SI Empathic Tendency Scale for Children and Adolescents were applied as pretest-posttest to measure the change in critical thinking and empathic tendencies of primary school students before and after the activities on social skills. Data were analyzed using ANCOVA and dependent groups t-test, and the effect size (eta-square [$\dot{\eta}^2$]) was calculated according to the variances between the scores. In the research, when the pretest mean scores of the experimental and control group primary school students in the social skill-based activity process were examined; it was concluded that the difference between the critical thinking skill posttest means scores was not statistically significant ($p>0.05$), however the empathic tendency mean scores posttest mean scores was statistically significant ($p<0.05$). Additionally, the difference between the pre-posttest critical thinking mean scores and empathic tendency means scores of the experimental group primary school students was statistically significant ($p<0.05$).

Keywords: Critical thinking, empathic tendency, primary school students, social skill

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This study was produced from the master dissertation written by the second author under the first author's supervision.

1. Introduction

1.1. Introduce the problem

The development in science and technology in the last century and the changing needs of the individual and society have also directly affected learning-teaching approaches. This process of change and the developments encountered have also changed the roles expected from individuals. Raising entrepreneurial and strong individuals who can use knowledge functionally in life, have communication skills, solve problems, think critically and empathize come to the fore. To raise this individual, it has been determined as an essential goal for students to acquire basic skills in various courses starting from primary schools, during the compulsory education process. The determined basic skills have come to the fore both directly and indirectly in primary school programs. It is stated that individuals should gain social participation skills, approach events critically and express their feelings, thoughts and objections in an understandable, clear and empathetic language within the framework of courtesy rules in Life Science classes (MoNE, 2018a). In science lessons, it comes to the fore to educate students who research, question, explain, discuss the source of information and it is considered to be essential for students to gain life skills. It is recommended that teachers create a democratic classroom atmosphere where students can freely express their views in learning environments and organize activities that will improve students' critical reasoning, empathy and communication skills (MoNE, 2018b). In the Social Studies course, students are expected to have critical thinking skills as individuals who know how to reach accurate and reliable information. Critical thinking and empathy are emphasized as essential skills that need to be gained (MoNE, 2018c).

Critical thinking and empathy can play a crucial role in solving the problems that may arise with the development of science. Since it can be predicted that people with critical vision and empathetic thinking ability can play a creative role and offer practical solutions to emerging problems in keeping up with this age. These two concepts provide significant benefits to individuals and societies regarding perception and correct analysis of events. Considering today's dynamics, the development of critical thinking and the empathic tendency is deemed essential for children in primary school, that are adult individual candidates. Moreover, the basic social skills acquired in primary schools are the skills that children can develop from an early age and are necessary for life. these skills are also very important for adapting the individual to the changing social, technological and cultural environment. Because critical thinking ability and empathy contribute to positive social behaviors and prevent problematic behaviors (Hasta & Güler, 2013; Çankaya & Ergin, 2015; Strayer & Roberts, 2004). Still, the lack of development of these two skills prevents students from having healthy communication with other individuals, causes them to have difficulties in speaking and discussion

processes, and causes them to be unsuccessful and unhappy in general, lacking social skills such as helping, sharing and cooperation (Çağdaş & Seçer, 2002).

An adequate social development process can effectively provide individuals with critical thinking and empathy skills (Kapıkıran & Kapıkıran, 2000). Children with social skills are considered more successful academically, more accepted by their peers, have a positive self-structure, and have strong school adaptation skills (Yurdakavuştu, 2012). The development of social skills in children helps them interact effectively with the environment, evaluate events and situations, communicate more effectively with people around them, and adapt to school life without any problem (Besi & Sakellariou, 2019). From this perspective, the researchers considered the primary school process essential and thought that organizing activities related to social skill development for students would affect their critical thinking and empathic tendencies. Therefore, whether the development of social skills will affect empathic tendency and critical thinking attitudes can be understood through this process. In addition, it was considered important that students who received distance education with the COVID-19 pandemic process were deprived of social skills-based activities and turned to group activities. In this context, the researchers considered the effect of social skills-based activities to be carried out for primary school students on students' critical thinking and empathic tendencies as a research problem and built the study on this basis. It is believed that this study will contribute to the field in terms of comparing the results of previous research on the subject and revealing the change of activities that primary school students actively participate in based on social skills to different skills.

1.2. Literature review

1.2.1. Critical thinking

Critical thinking includes analyzing facts, making comparisons, generating and organizing thoughts, defending opinions, evaluating arguments and solving problems (Halpern, 2003). Critical thinking is a process that involves specific standards to make judgments that meet the criteria of rationality and realism (Nosich, 2012). Critical thinking is seen as a high-level skill and requires higher cognitive skills than simple mental activities such as knowing, memorizing, understanding and remembering. In the critical thinking process, activities such as analysis, evaluation, problem-solving and decision making come to the fore (Akarsu, 2018).

Critical thinking is defined in two structures as making judgments and decisions. Evidence, methods, concepts, contexts and criteria are explained, interpreted, analyzed, evaluated and inferred when making judgments or decisions (Facione, 1990). Watson and Glaser (1964) described critical thinking as a process. They state that the combination of elements such as perceiving the existing problem, the researcher's attitude shown to

prove its accuracy, the ability to acquire knowledge and use the information constitutes this process.

Critical thinking is perceived as one of the 21st-century skills students should acquire (Partnership for 21st Century Skills [P21], 2009). Instead of raising students who accept information without investigating or questioning, it is aimed to raise students who research, question, analyze, construct in their minds, learn how to learn, and use the learned information in daily life (Yıldırım & Şensoy, 2017). Therefore, it is aimed to raise students who can keep up with the times and adapt to developments. Schools should teach students to look problems from different perspectives, think critically and originally, and contribute to their development (İpşiroğlu, 2015). However, today, factors such as education, family, environment and culture and technological tools such as smartphones, tablets, computers, televisions can prevent individuals from critical thinking. These factors also limit individuals' ability to think and reason since they occupy their minds too much (Akarsu, 2018).

1.2.2. Empathetic tendency

Empathy is the individual's entry into the universe of feelings, leaving aside his ideas, values and prejudices. According to Rogers (1983), empathy is the process of putting oneself in the other peoples' place, entering their phenomenological world, looking at events from their perspectives, understanding and feeling their feelings and thoughts correctly and conveying this situation to them. Empathy is not an automated response; it is a process. All the exchange of information and feelings among individuals is evaluated within this framework (Güzel, Sevi Tok & Güney, 2019). Empathy is the capacity to understand other people's feelings and ideas by putting themselves in their shoes. With empathy, individuals construct a network of relationships that perceive others' experiences and create new meanings (Karataş, 2012). According to the theoretical view that studies the elements of empathy, cognitive and emotional elements are mentioned. With the cognitive aspect of empathy, the individual's understanding of the other person's feelings comes to the fore, while the emotional aspect means that the individual feels what the other person feels (Gladstein, 1983; Schreiter, Pijnenborg & Rot 2013).

The skill dimension of empathy and revealing the empathic behavior ability of the person is expressed as "empathic tendency." The empathic tendency is the level of desire to help and be affected by the emotional experiences of the empathic individual (Dökmen, 1996). The empathic tendency is associated with the potential to empathize. The empathic tendency, which is more related to the emotional dimension of empathy, expresses the tendency to understand the feelings of others and help them. The ability to empathize appears in everyone in many ways. Individuals with an empathic tendency can put themselves in the shoes of others and feel their emotions more comfortably. They move away from egocentrism and develop a desire to help people. Therefore, instead of

displaying negative behaviors towards those around them, they are more cooperative and friendly (Gökler, 2009).

Empathy, an emotional and mental ability, provides an understanding of other people's motivations, values, and similarities and feelings. The ability of empathy, which contributes positively to the communication of individuals with each other, can be developed with education (Kapıkıran, Kapıkıran, & Başaran, 2010). Consequently, it can be asserted that for the individual to learn empathy, he must first grow up in an environment where empathic understanding is displayed (Gökler, 2009).

1.3. Purpose of the research

The research aims to determine the effect of activities carried out based on social skills on primary school students' critical thinking and empathic tendencies. The problem statement created in this context was determined as "Does the activity process based on social skills affect primary school students' critical thinking and empathic tendencies?" Sub-problems determined in line with this problem;

1- Does the activity process based on social skills affect the critical thinking skills of primary school students?

a. When the critical thinking skill pre-test mean scores of experimental and control groups are controlled, is there a significant difference between the critical thinking skill post-test mean scores of the groups?

b. Is there a significant difference between the pre and post-test critical thinking skill mean scores of experimental group?

c. Is there a significant difference between the pre and post-test critical thinking skill mean scores of control groups?

2- Does the activity process based on social skills affect the empathic tendencies of primary school students?

a. When the empathic tendency pre-test means scores of experimental and control groups are controlled, is there a significant difference between the empathic tendency post-test mean scores of the groups?

b. Is there a significant difference between the pre and post-test empathic tendency mean scores of experimental group?

c. Is there a significant difference between the pre and post-test empathic tendency mean scores of control groups?

2. Method

2.1. Research Model

In this study, a quasi-experimental design with a pretest-posttest experiment-control group was applied. In the experimental design, pre-tests are used without interfering with the experimental and control groups. The experimental procedure is applied, and then the post-test values between the groups are measured and compared. Thus, it can be generalized when similar conditions are met (Johnson & Christensen, 2014; Gürbüz and Şahin, 2016). In the quasi-experimental design, one of the selected groups is taken as the experimental group and the other as the control group, without making an unbiased assignment at the beginning (Büyüköztürk et al., 2016). The research was organized following the pretest-posttest experimental design with one experimental and two control groups. The purpose of choosing two different control groups is to minimize the factors that threaten internal and external validity in the experimental process. In this design, the effect of the experimental procedure was tested with the study on the experimental and control groups. After the pre-test application, while the social skills-based activities were carried out to the experimental group, the control groups continued by teaching with the Ministry of National Education program, and then the post-test was then applied to all three groups. The research design was given in Figure 1.

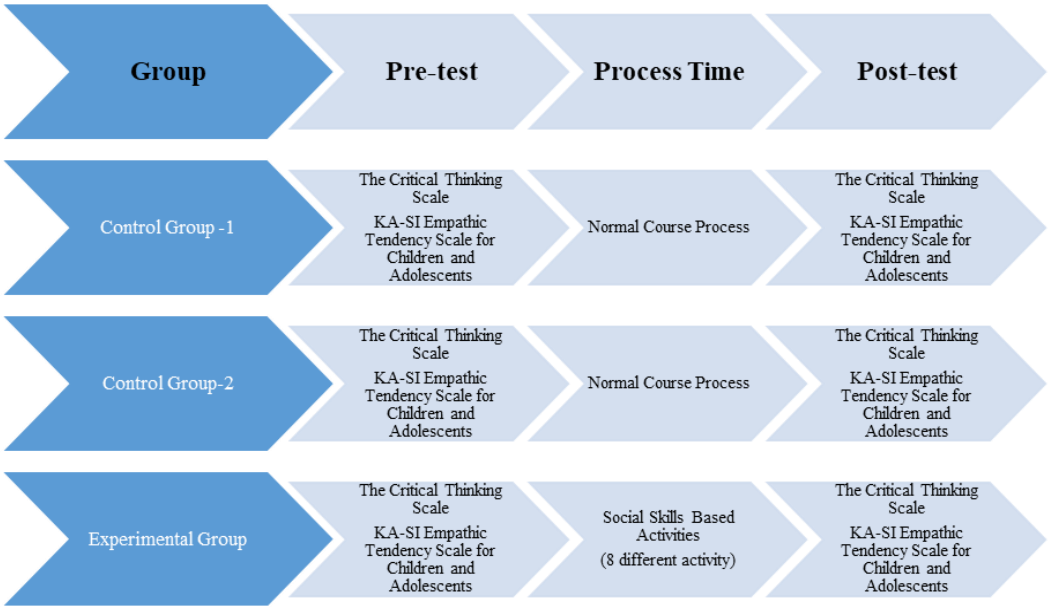

Figure 1. Pretest-posttest experimental-control group semi-experimental design

As seen in Figure 1, to measure the change in the critical thinking and empathic tendencies of the primary school students before and after the activities carried out based on social skills, "Critical Thinking Perception Scale" and "KA-SI Empathic Tendency Scale for Children and Adolescents" was applied as pretest-posttest. The process step includes eight different social skills-based activity processes for primary school students. After the experimental process, the pre and post-test data were analyzed, and the data were interpreted.

2.2. Sample Group

The research was carried out in the second semester of the 2020-2021 academic year. During the COVID-19 pandemic period, the necessary permissions were obtained from the Provincial Directorate of National Education (document dated 24.02.2021 and numbered 16437), and the implementation process was carried out in the face-to-face education process. The criterion sampling method, one of the purposive sampling types, was used to determine the study group for the experimental process. In criterion sampling, it allows examining people, events, objects or situations with specific qualifications (Büyüköztürk et al., 2016). The criteria applied to determine the study group of the research are that they are registered to the fourth grade (determined to be able to answer the pre and post-tests sincerely and be more active in carrying out the activities), living in a socio-economic and socio-cultural environment that will reflect the general situation of the country (determined to ensure generalizability), the easy accessibility of the researcher and the presence of at least three different fourth grade branches (experimental, control-1, control-2, …) in the school to be determined. Within the framework of these criteria, a preliminary interview was held with the Provincial Directorate of National Education of a province in the Central Anatolia Region, and schools that could meet these criteria were determined. Preliminary interviews were conducted with these primary schools and forty-nine primary school students studying in the fourth grade of a public school were included in the study, acting on the voluntary basis of the school administration and classroom teachers.

"Critical Thinking Perception Scale" and "KA-SI Empathic Tendency Scale" pre-tests were applied to test whether students in all three branches of primary school are in identical groups. The mean scores of the branches are compared with the ANOVA test and presented in Table 1.

Table 1. Comparison of pre-test mean scores by groups

Scale	Group	$\bar{X}$	SD	Source of Variance	Sum of Squares	df	Mean Square	F	p
The Critical Thinking Scale	4A	2.36	0.24	Intergroups	0.042	2	0.021	0.271	0.764
	4B	2.34	0.29	Intragroup	3.554	46	0.077		
	4C	2.41	0.29	Total	3.595	48	0.098		
KA-SI Empathic Tendency Scale	4A	3.16	0.63	Intergroups	0.254	2	0.127	0.365	0.696
	4B	3.32	0.49	Intragroup	16.034	46	0.349		
	4C	3.18	0.62	Total	16.288	48	0.476		

F(2, 46)=0.271; p=0.764; F(2, 46)=0,365; p=0.696

When the pre-test mean scores were compared, there was no significant difference between the mean scores of the three groups (p>0.05). Consequently, the groups were

accepted as identical, and lots were drawn, and one of the groups was determined as Experiment (n:17) and the other two as Control-1 (n:16) and Control-2 (n:16) groups.

2.3. Implementation process

The implementation process was planned as a free time activity with included activities based on social skills. Expert opinions were taken by the researchers before starting the experimental process. Due to the COVID-19 pandemic measures, a reduced face-to-face training process was expected, and eight different activities were held between 08.03.2021 and 15.04.2021 by obtaining the necessary permissions. In line with the opinions of the school administration and classroom teachers, it was determined to achieve the implementation process on Mondays and Thursdays as students continue their education in reduced classrooms. The implementation period was planned as eight weeks. However, in case of a break-in face-to-face education and the possibility of switching to distance education, the implementation process was terminated by performing activities for one class hour in the first four weeks and two hours in the following weeks. The application process for the experimental and control groups determined by the lottery method after the pre-test is presented below:

2.3.1. Implementation process for control group primary school students

No activity was organized based on social skills by the researcher of the control group of primary school students. The researcher planned what should be done in that weekly lesson with the classroom teachers responsible for the control groups. In line with the opinions of the classroom teachers, time was spent with the control group as much as the activity period spent with the experimental group. Due to the pandemic process, the researcher generally carried out curriculum-based activities such as reading activity, subject repetition, problem-solving, and evaluation studies with primary school students in the lessons. 240 minutes of activity was organized with the control group students during the process. At the end of the process, post-test applications were conducted.

2.3.2. Implementation process for experimental group primary school students

A social skill-based activity process was carried out with the experimental group of primary school students during the free time activities. Expert approval was obtained, and the activities prepared in the form of lesson plans were applied face to face by the researcher. The activities were supported by presentations, videos, drama studies and question-answer practices, and based on a student-centered approach. At the end of each activity, questions were asked according to the purpose of the activity to support students' critical thinking, and students were encouraged to respond with individual or group work. The researcher took on the role of a guide in the activities that the students had difficulty in starting and increased their participation in the activities by supporting and encouraging them. The activities planned in the application process were carried out

with the experimental group of primary school students for 240 minutes. At the end of the process, post-test applications were conducted.

The activities carried out based on the prepared social skills were presented to the opinions of two education experts (classroom teacher and guidance teacher) and two field experts (Classroom Education, Guidance and Psychological Counseling) in terms of relevance to the purpose, clarity of the expressions, and content validity. The activities were given their final form after the expert opinions. The activities and related social skills were presented in Table 2.

Table 2. Information about the prepared activities

Week	Activity Name	Associated Social Skill
1	Balloons with Music	He/She is willing to communicate.
2	What Are My Feelings and Thoughts?	He/She expresses feelings and thoughts. He/She approaches the feelings and opinions of the other person critically.
3	I develop empathy.	He/She empathizes with individuals with special needs.
4	I Know Whom I Can Get Help From	When faced with a personal-social and educational situation/problem, he/she tries to solve it. He/She recognizes where and how to get help.
5	What Can I Do When I am Angry?	He/She expresses anger, emotions and thoughts in appropriate ways.
6	What should Ali Can do?	He/She realizes what he/she can do in situations where he/she is mocked.
7	Fighting Bullying	He/She uses coping methods when faced with a social problem (bullying, abuse, conflict).
8	How Do I Solve My Problems?	He/She explains the steps of problem-solving. He/She understands the need to look at events or situations critically and separately.

2.4. Data collection tool

As data collection tools, the "Critical Thinking Perception Scale" and "KA-SI Empathic Tendency Scale" were applied in this study to fourth-grade primary school students as pre-test and post-test.

2.4.1. The critical thinking scales

The Critical Thinking Perception Scale was developed by Aydoğdu (2020) to determine the critical thinking perceptions of primary school 4th-grade students. The scale consists of four dimensions: reasoning, flexibility, elaboration, interpretation and 15 items. There are four items in the thinking, flexibility and reasoning dimensions of the scale and three items in the interpretation dimension. According to the results of the reliability analysis

of the scale, the internal consistency coefficient (Cronbach's Alpha) was calculated as 0.65. The scale is in triple Likert type and is listed as "Always" (3), "Sometimes" (2) and "Never" (1). It is equivalent to the "Always" option if it covers a situation or behavior that the students do regularly, the "Sometimes" option if the statements in the items cover a problem or behavior that the students do from time to time, and the "Never" option if the statements in the items cover a condition or behavior that the students never do. The maximum total score obtained from the scale is 45 (15x3), and the minimum score is 15 (15x1). The fact that the mean score received from the scale is close to 3 indicates the high level of critical thinking of the fourth-grade primary school students, and the closer to 1 indicates the low level of critical thinking.

2.4.2. KA-SI empathic tendency scale for children and adolescents

The KA-SI Empathic Tendency Scale for Children and Adolescents was developed by Kaya and Siyez (2010) as a paper-pencil scale specific to Turkish culture to measure the empathic tendencies of children and adolescents. As a result of the validity and reliability study of the scale, it was observed that the appearance of the 3-5 grades and the appearance of the 6-12 grades were different. Thus, it was decided that it would be accurate to prepare the scale as separate forms for children and adolescents. For this reason, the scale has two forms, namely the child form and the adolescent form. The KA-SI Empathic Tendency Scale-Child Form consists of 13 items, and the KA-SI Empathic Tendency Scale-Adolescent Form consists of 17 items. Since this study was conducted with primary school fourth-grade students, only the child form was applied. The response style of the scale was arranged in a four-level structure: (1) not suitable for me at all, (2) somewhat suitable for me, (3) quite suitable for me, and (4) entirely suitable for me. It is observed that the KA-SI Empathic Tendency Scale Child Form, which consists of 13 items, has two sub-dimensions, emotional empathy and cognitive empathy. There are 7 items in the emotional empathy sub-dimension and 6 items in the cognitive empathy sub-dimension. Some of the items measure emotional empathy; some measure cognitive empathy. Regarding the reliability of the child form, the Cronbach's alpha coefficient, which shows the internal consistency of the child form according to the internal consistency coefficients and test-retest reliability coefficients, was calculated as 0.84 for the whole scale, 0.79 for emotional empathy, and 0.72 for the cognitive empathy sub-dimension. It indicates that the higher the mean scores obtained from the scale, the higher the empathic tendency in children, and the lower the mean scores, the lower the empathic tendency.

2.5. Analysis of the data

SPSS and Excel package programs were utilized to analyze the scales applied before and after the social skills-based activities. In the analysis of the data, negative items were coded in reverse. In the data analysis, Kolmogorov-Smirnov[a] and Shapiro-Wilk tests

were performed for the normality of the data distribution. Since the data in this study was more than 29, the Kolmogorov-Smirnov[a] test results were examined, and it is normal for this value to be greater than 0.05 for both the pre-test and post-test skewness and kurtosis coefficients between +2 and -2. It has been seen as an indicator of its distribution (Pallant, 2001). The pre-post-test Normality Test results of the scales applied to the experimental and control groups are presented in Table 3.

Table 3. Pretest-posttest normality distribution results of the scales

			Kolmogorov-Smirnov[a]			Shapiro-Wilk			Skewness Values	Kurtosis Value
			Statistic	df	Sig.	Statistic	df	Sig.		
Experimental Group	The Critical Thinking Scale	Pre-test	0.200	17	0.068	0.894	17	0.053*	-0.006/0.550	-0.060/1.063
		Post-test	0.158	17	0.200	0.957	17	0.573*	-0.012/0.550	-0.575/1.063
	KA-SI Empathic Tendency Scale	Pre-test	0.120	17	0.200	0.959	17	0.608*	-0.926/0.550	-0.072/1.063
		Post-test	0.189	17	0.109	0.923	17	0.164*	-0.953/0.550	0.780/1.063
Control 1 Group	The Critical Thinking Scale	Pre-test	0.109	16	0.200	0.958	16	0.622*	-2.082/0.564	5.214/1.091
		Post-test	0.159	16	0.200	0.904	16	0.092*	-0.579/0.564	0.558/1.091
	KA-SI Empathic Tendency Scale	Pre-test	0.118	16	0.200	0.960	16	0.670*	-0.512/0.564	-0.053/0.564
		Post-test	0.131	16	0.200	0.942	16	0.380*	-0.468/0.567	-0.512/1.091
Control - 2 Group	The Critical Thinking Scale	Pre-test	0.151	16	0.200	0.892	16	0.061*	-0.764/0.564	-0.349/1.091
		Post-test	0.139	16	0.200	0.925	16	0.204*	-0.853/0.564	0.732/1.091
	KA-SI Empathic Tendency Scale	Pre-test	0.229	16	0.024	0.936	16	0.302*	-0.471/0.564	-1.169/1.091
		Post-test	0.148	16	0.200	0.915	16	0.139*	-0.732/0.564	-0.477/1.091

* p>0.05

In the Kolmogorov-Smirnov[a] normality analysis, it was concluded that most of the scales applied to the experimental and control groups showed normal distribution of both pre-test and post-test data (p>0.05), and the skewness and kurtosis coefficients were in the range of -2 to +2. As a result of the analyzes made in this context, it was decided to use parametric measurements in pretest-posttest data analysis. According to these tests,

the answers given by the primary school students to the data collection tools before and after the social skills-based activities were analyzed using frequency, arithmetic mean, analysis of covariance (ANCOVA) and dependent groups t-test, and the effect size according to the variances between the scores (eta-square [η^2]) was calculated.

Reliability coefficients were calculated for the Critical Thinking Perception and KA-SI Empathic Tendency Scales, which were applied as a pretest-posttest to primary school fourth-grade students. After the calculations, reliability coefficients close to the values, for which the scales were developed, were obtained. Based on these calculations, it was seen that the results obtained from the scales applied as pre-test and post-test were reliable. The Cronbach's Alpha reliability coefficient calculations for the used scales are presented in Table 4.

Table 4. Reliability analysis of the applied scales

Test	Dimension	Number of Items	Cronbach's Alpha	Reliability*
Pre-tests	The Critical Thinking Scale	15	0.65	Relatively Reliable
	KA-SI Empathic Tendency Scale	13	0.88	Highly Reliable
Post-tests	The Critical Thinking Scale	15	0.65	Relatively Reliable
	KA-SI Empathic Tendency Scale	13	0.88	Highly Reliable

* Büyüköztürk et al., (2016).

3. Results

In this research, the effect of the activities carried out based on social skills on primary school students' critical thinking and empathic tendencies were determined. The researched problem statement and the findings for the sub-problems are presented in the form of sub-headings.

3.1. Findings regarding the effect of the activity process based on social skills on the critical thinking skills of primary school students

To determine whether the activity process based on social skills affects the critical thinking skills of the primary school students, the mean scores of the primary school students in the experimental and control groups from the Critical Thinking Perception Scale were considered. In this context, the findings related to the sub-problems are presented below in the form of tables:

3.1.1. When the critical thinking skill pre-test mean scores of experimental and control groups are controlled, is there a significant difference between the critical thinking skill post-test mean scores of the groups?

Analysis of covariance (ANCOVA) was used to test the critical thinking skill post-test mean scores of the primary school students in the experimental and control groups by controlling their critical thinking skill pre-test scores. The basic assumptions of ANCOVA were checked before the comparisons of the post-tests. Firstly, it was determined that the assumption of normality was provided for the dependent variable distributions in all subgroups. The relationship between critical thinking skill pre-test means scores, the control variable, and critical thinking skill post-test mean scores, the dependent variable, was examined (r=0.541; p=0.000) and a linear relationship was found. At the same time, the assumption of independence of the covariate from the application was also met (r=0.140; r<0.3). The group*pre-test co-effect was not significant (p=0.060), and the assumption that the regression slopes were equal was accepted. The assumption of the equality of the variances of the groups was made with the Levene test, and as a result of this test, it was shown that the variances could be considered equal. The reliability of the measurement tool was tested both in the pilot applications and in the actual application, and the measurement tool was accepted as reliable and ANCOVA was adopted. The ANCOVA results for comparing the post-test mean scores between the groups by controlling the critical thinking skill pre-test scores are presented in Table 5.

Table 5. ANCOVA results regarding the comparison of post-test mean scores between groups when critical thinking skills pre-test scores were controlled

Source	Sum of Squares	df	Mean Square	F	p	Effect Size
Pre-test	1.752	1	0.670	12.421	0.001	
Group	0.187	2	0.094	0.664	0.520*	0.029
Error	6.346	45	0.141			
Total	581.957	49				

*F(2, 45)=0.664; p=0.520; $\dot{\eta}^2$=0.029

When Table 5 is examined, the F values calculated as a result of ANCOVA were significant for the pre-test (covariant) but not for the post-test. The fact that the F value of the pre-test is significant (F(1, 45)=12.421; p<0.05) shows that the pre-process critical thinking skill of primary school students explains a significant variance. Statistically, when the critical thinking skill pre-test mean scores were controlled, it was determined that there was no significant difference between the critical thinking skill post-test mean scores of the experimental and control groups (F(1, 45)=0.664; p>0.05).

The critical thinking skill post-test corrected mean scores of the primary school students in which the social skill-based activity process occurred ($\bar{X}_{\text{experiment corrected}}$=3,49) and the critical thinking skill post-test corrected mean scores of the primary school students in which the social skill-based activities were not taught ($\bar{X}_{\text{control-1 corrected}}$=3,34;

$\bar{X}_{control\text{-}2\ corrected}$=3,42) was high, but there was no significant difference between mean scores (p>0.05). This result can be interpreted that when the critical thinking skill pre-test scores are controlled, the social skill-based activity process increased the critical thinking skills of the primary school students compared to the primary school students who did not, but this did not make a significant difference.

3.1.2. Is there a significant difference between the pre and post-test critical thinking skill mean scores of experimental group?

Before and after the social skills-based activity process, primary school students' critical thinking skill mean scores were calculated and compared with dependent groups t-test and presented in Table 6.

Table 6. Comparison of experimental group pre-post-test critical thinking skill mean scores with dependent groups t-test

Group	Test	N	$\bar{X}$	SD	df	t	p
Experimental Group	Pre-test	17	2.36	0.24	16	-7.785	0.000
	Post-test	17	2.61	0.19			

t(16)=-7.785; p=0.000

As seen in Table 6, the critical thinking skill post-test mean scores of the primary school students, where the social skill-based activity process occurs, are higher than the mean pre-test scores. It is seen that there is a statistically significant difference between primary school students' critical thinking skill pre-post-test mean scores in the social skill-based activity process (p<0.05). The effect size of the difference between the pre-posttest mean scores (*Cohen's d*) was calculated as 1.10, and this value is a big effect since d>0.8. This situation can be interpreted as the social skill-based activity process increases the critical thinking skills of primary school students with significant effect.

3.1.3. Is there a significant difference between the pre and post-test critical thinking skill mean scores of control groups?

The critical thinking skill mean scores of the primary school students, in which the social skill-based activity process was not realized, were calculated and compared with the dependent groups t-test and presented in Table 7.

Table 7. Comparison of control groups pre-posttests critical thinking skill mean scores with dependent groups t-test

Group	Test	N	$\bar{X}$	SD	df	t	p
Control Group -1	Pre-test	16	2.34	0.29	15	-0.531	0.603
	Post-test	16	2.37	0.24			
Control	Pre-test	16	2.41	0.29	15	0.290	0.776

Group-2	Post-test	16	2.40	0.25

t(15)=-2.030, p=0.060; t(15)=0.104; p=0.919

As seen in Table 7, the critical thinking skill post-test mean scores and the mean pre-test scores of the primary school students who did not have the social skill-based activity process are very close. The social skill-based activity process did not take place. It is seen that the difference between the critical thinking skill pre-posttests mean scores of the primary school students is not statistically significant (p>0.05). In this context, the fact that social skills-based activities are not included in the course processes can be interpreted as the primary school students not developing their critical thinking skills.

3.2. Findings regarding the effect of the activity process based on social skills on the empathic tendency of primary school students

To determine whether the activity process based on social skills affects the empathic tendencies of the primary school students, the mean scores of the primary school students in the experimental and control groups from the KA-SI Empathic Tendency Scale for Children and Adolescents were taken into account. In this context, the findings related to the sub-problems are presented below in the form of tables:

3.2.1. When the empathic tendency pre-test means scores of experimental and control groups are controlled, is there a significant difference between the empathic tendency post-test mean scores of the groups?

Covariance analysis (ANCOVA) was applied to control the empathic tendency pre-test scores of the primary school students in the experimental and control groups and test the empathic tendency post-test mean scores. The basic assumptions of ANCOVA were checked before the comparisons of the groups were made. Firstly, it was determined that the assumption of normality was provided for the dependent variable distributions in all subgroups. The relationship between the control variable empathic trend pre-test mean scores and the dependent variable empathic trend post-test mean scores were observed (r=0.726; p=0.000), and a linear relationship was found. Simultaneously, it was observed that the assumption of independence of the covariate from the application was also met (r=0.013; r<0.3). It was discovered that the group*pre-test co-effect was not significant (p=0.583), and the assumption that the regression slopes were equal was accepted. The assumption of the equality of the variances of the groups was made with the Levene test, and as a result of this test, it was shown that the variances could be considered equal. The reliability of the measurement tool was tested both in the pilot applications and in the actual application, and the measurement tool was accepted as reliable and ANCOVA was adopted.

The ANCOVA results for comparing the post-test mean scores between the groups by controlling the empathic tendency pre-test scores are presented in Table 8.

Table 8. ANCOVA results regarding the comparison of post-test mean scores between groups when empathic tendency pretest scores were controlled

Source	Sum of Squares	df	Mean Square	F	p	Effect Size
Pre-test	8.067	1	8,067	66.846	0.000	0.193
Group	1.298	2	0.649	5.377	0.008*	
Error	5.431	45	0.121			
Total	539.621	49				

*F(2, 45)=0.664; p=0.008; $\dot{\eta}^2$=0.193

When Table 8 is examined, the F values calculated as a result of ANCOVA were significant for the pre-test (covariant). The fact that the F value of the pre-test is significant (F(1, 45)=66,846; p<0.05) shows that the empathic tendencies of the primary school students before the process explain significant variance. Statistically, when the empathic tendency pre-test mean scores are controlled, there is a significant difference between the empathic tendency post-test mean scores of the primary school students, where the social skill-based activity process is realized, and the empathic tendency post-test mean scores of the primary school students, where the activities are not realized (F(1, 45)=5.337; p<.05). The eta-square ($\dot{\eta}^2$) value was 0.193, and 19% of the variance in the social skills post-test mean scores of the primary school students is due to the difference in the social skills training process applied. According to Cohen, Manion and Morrison (2018), this value (0.14<$\dot{\eta}^2$) is accepted as high.

When the empathic tendency post-test corrected mean scores of primary school students in which social skill-based activity process takes place ($\bar{X}_{\text{experiment corrected}}$=3.45) and control group primary school students' empathic tendency post-test corrected mean scores ($\bar{X}_{\text{control-1 corrected}}$=3.05; $\bar{X}_{\text{control-2 corrected}}$=3.31) were compared by controlling the pre-test scores, a significant difference between mean scores were found (p<0.05). It can be interpreted that the social skill-based activity process significantly increased the empathic tendencies of the primary school students compared to the primary school students who did not.

3.2.2. Is there a significant difference between the pre and post-test empathic tendency mean scores of experimental group?

Before and after the social skill-based activity process, the mean scores of the primary school students' empathic tendency were calculated and compared with the dependent groups t-test and presented in 9.

Table 9. Comparison of pre-posttests empathic tendency mean scores of the experimental group with dependent groups t-test

Group	Test	N	$\bar{X}$	SD	sd	t	p
Experimental Group	Pre-test	17	3.16	0.53	16	-3.794	0.002
	Post-test	17	3.40	0.41			

t(16)=-3.794; p=0.002

As seen in Table 9, the empathic tendency post-test means scores of primary school students, where the social skill-based activity process is realized, are higher than the mean pre-test scores. It is seen that the difference between the pre-posttest mean scores of the primary school students' empathic tendency in the social skill-based activity process is statistically significant ($p<0.05$). The effect size (Cohen's d) of the difference between the pre-posttest mean scores were calculated as 0.51, and since this value is in the range of $0.5<d<0.8$, it is a medium-size effect. This situation can be interpreted as the social skill-based activity process increases the empathic tendencies of primary school students with a medium-sized effect.

3.2.3. Is there a significant difference between the pre and post-test empathic tendency mean scores of control groups?

The mean scores of the empathic tendency of primary school students, in which the social skill-based activity process was not realized, were calculated and compared with the dependent groups t-test and presented in Table 10.

Table 10. Comparison of pre-post-test empathic tendency mean scores of control groups with dependent groups t-test

Group	Test	N	$\overline{X}$	SD	df	t	p
Control Group -1	Pre-test	16	3.32	0.49	15	1.483	0.159
	Post-test	16	3.16	0.61			
Control Group-2	Pre-test	16	3.18	0.62	15	-1.399	0.182
	Post-test	16	3.28	0.58			

t(15)=-1.483, p=0.159; t(15)=-1.399; p=0.182

As seen in Table 10, the empathic tendency post-test means scores and the mean pre-test scores of the primary school students who did not have the social skill-based activity process are very close. The social skill-based activity process did not materialize. It is seen that the difference between the primary school students' empathic tendency pre-posttest mean scores is not statistically significant ($p>0.05$). In this context, the fact that social skills-based activities are not included in the course processes can be interpreted as the primary school students not developing their empathic tendencies.

4. Discussion and Conclusion

In the research, the effect of activities carried out based on social skills on primary school students' critical thinking and empathic tendencies were examined. Students' critical thinking and empathic tendency skills are deemed essential for social skills, such as communicating with people around them, adapting to society, being sensitive to events or situations, and controlling their negative emotions. Encouraging social participation in primary schools positively affects students' social skills, and it is suggested that social skills-based education is an effective teaching approach, mainly in primary schools (Denham, Hatfield, Smethurst, Tan & Tribe, 2006). Erbay (2008), in his research with

primary school first-grade students, determined that students who received pre-school education and participated in activities based on social skills had better social skill levels than students who did not receive this education. Social skills are triggered by teamwork in primary school. With these activities, students socialize and have opportunities such as sharing, helping each other, discussing, solving common problems in the group and making decisions (Yüksel, 2003). In the study conducted by Yıldız, Şimşek and Yüksel (2017), the lessons were taught by integrating a collaborative teaching technique, and the social skill levels of the students increased significantly compared to the pre-test scores. The effects such as making joint decisions by discussing different ideas in the problem situation, listening to each other, defending their opinions, using the assets of the group they are members of were given to cause students' social skills development. Children, who learn how to express themselves and their feelings, ask questions, listen and understand others, deal with difficulties, gain different skills and develop the learning skills we expect more easily (Akkök, 2006). In addition, students with weak social skills cannot communicate well with the people they live with. Their communication can turn into friction and conflict because their speaking and discussion skills are not developed (Yiğit & Yılmaz, 2011). Activities to be carried out based on social skills are recommended to be used in educational processes, regarding that besides improving social relations, individuals learn through experiences by adding their thoughts, acceptance and skills to the learning environment and gain the ability to understand the individual in front of them (Pongsophon, Yutakom & Boujaoude, 2010). When evaluated from this point, activities based on social skills will be able to provide opportunities for developing different skills. This study revealed that primary school students' critical thinking skills and empathic tendencies could be developed with activities carried out based on social skills.

When the findings for the first sub-problem of the study were examined, it was discovered that the difference between the post-test mean scores was not statistically significant when the critical thinking skill pre-test mean scores of the experimental and control group primary school students were checked. However, when the corrected mean scores were considered, it was noticed that the post-test critical thinking mean scores of the experimental group primary school students were higher than the control group primary school students. Moreover, it was determined that the difference between the pre-posttest critical thinking mean scores of the experimental group primary school students was statistically significant and the effect size was large. In this context, it was decided that the activity carried out based on social skills developed the critical thinking skills of primary school students. Güzel (2005) designed an experimental group study for teaching social research with primary school fourth-grade students. As a result of the study, the critical thinking abilities of the group members and their perseverance towards learning were higher than the group that adhered to the traditional curriculum education. Magnussen, Ishida and Itano (2000) determined that with the teaching

method they designed, a significant increase occurred in the undergraduate student group belonging to the low critical thinking skill at the end of the experimental process. Similarly, Fung and Howe (2012) aimed to develop critical thinking through group work. A significant difference in favor of the experimental group students in the critical thinking post-test results was observed at the end of the group activities. The study results with students at different levels show that taking the subject or course process out of traditional teaching methods, organizing activities together with group work and directing students to processes such as communication, discussion, and interpretation can affect the critical thinking process of students (Hasançebi, 2014; Şahin, 2016; Tal & Kedmi, 2006). In this study, almost all activities based on social skills were carried out as group activities. The experimental group, primary school students, was more active than the control group. Consequently, the critical thinking skills of the primary school students in the experimental group also improved. As Moore (2010) states, focusing on group interaction in the classroom gives the learner plenty of time to think, discuss questions, and support critical thinking skills.

When the findings for the second sub-problem of the research were analyzed, it was noticed that the difference between the post-test mean scores was statistically significant in favor of the experimental group when the social skill-based activity process experimental and control group primary school students' empathic tendency pre-test mean scores were checked. In addition, it was determined that the difference between the pre-posttest empathic tendency mean scores of the experimental group primary school students was statistically significant, and the effect size was medium. In this context, it was concluded that the activity process carried out based on social skills developed the empathic tendencies of primary school students. Different studies prove that social skills affect empathy and empathetic perception in other age groups (Castillo et al., 2013; Schutte et al., 2001; Tatar, Çamkerten & Özdemir, 2020). However, a significant relationship was found between communication skill, which is an essential component of social skill, and empathic tendency in the literature (Çetinkaya & Alparslan, 2011; Bozkır, Tekin & Mete, 2015; Erdoğan & Görücü, 2017; Kurt, 2019; Uğurlu, 2013). In this study, designing activities based on social skills as group activities supports communication skills and may also affect empathic tendency. Because with group activity, students can see the other person's point of view, respect different perspectives and try to act together (Akduman, Karahan & Solmaz, 2018); that is, they can develop an empathic tendency. Yüksel (2003) organized one-day training sessions with primary school fourth-grade students with an education plan that includes role-playing, knowledge and modeling. As a result of the training plan, it was determined that the empathy skills of the experimental group primary school students improved. On the other hand, was able to significantly enhance students' empathy skills with a training program that included processes such as being able to recognize and express which emotions are reflected in a particular situation, understanding that other people might

be in the same position, and developing and communicating listening skills. In their study, Akgün and Çetin (2018) considered the social skills of the individual important in interpersonal relations. They determined that individuals with developed empathy skills did not have problems in interpersonal relationships. They suggested that it would be beneficial to organize activities by emphasizing social skills to develop empathy skills in preparing and implementing curriculum programs.

In almost all curricula in primary schools, providing students with basic skills is emphasized. The distance education process in the COVID-19 period has created an obstacle to the development of these skills. In the face-to-face education process, teachers are expected to focus on activities that will eliminate this deficiency. The ability to think critically and empathize from an early age can raise individuals who can keep up with the information age. Considering the science and technology developed in the last century, it should be regarded as even more important to raise students who think, question, discuss and make effective decisions. Because in the future, it can be predicted that individuals who have a critical vision, empathic thinking ability, and effective communication in keeping up with the technological age will be at the decision-making point and offer more effective solutions to the emerging problems. From this point of view, group activities that can be done based on social skills, starting from basic education, can be effective. The fact that primary school teachers can organize the group activities in lessons such as Life Science, Turkish, Science and Social Studies include communication, discussion, sharing, problem-solving, and decision-making can provide students with critical thinking skills. They can create an empathic tendency by approaching events from a different perspective. At the same time, fun activities that can be carried out based on social skills can be designed in the Physical Education and Game course in primary schools. It can be suggested that different researchers design studies on the development of basic skills such as problem-solving, reasoning, decision-making, and communication with various social skills activities that can be carried out in primary schools.

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