



# The Predicting Power of Primary School Students' Critical Thinking Tendencies on Entrepreneurial Tendencies

Emine AKKAŞ BAYSAL<sup>1</sup>, Ramazan YURTSEVEN<sup>2</sup>, Gürbüz OCAK<sup>3</sup>

<sup>1</sup> Sandıklı School of Applied Sciences, Afyon Kocatepe University, Afyonkarahisar, Türkiye  0000-0002-5711-0847

<sup>2</sup> Faculty of Education, Afyon Kocatepe University, Afyonkarahisar, Türkiye  0000-0001-9963-8642

<sup>3</sup> Faculty of Education, Afyon Kocatepe University, Afyonkarahisar, Türkiye  0000-0001-8568-0364

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## ABSTRACT

This study aimed to determine the relationship between primary school students' critical thinking and entrepreneurial tendencies. The relational screening model was used. Three hundred seventy-three primary school students participated in the research. The data were collected with the "Critical Thinking Tendency Scale for Primary School Students" and the "Entrepreneurial Tendency Inventory for Children". In the analysis of the data, descriptive statistics, t-tests, correlation, and regression analyses were applied. According to the findings, primary school students' critical thinking and entrepreneurial tendencies were high. While critical thinking tendencies did not differ significantly by gender, entrepreneurial tendencies showed significant differences. Critical thinking and entrepreneurial tendencies did not differ significantly by grade level. A high positive correlation was found between the critical thinking tendencies of primary school students and their entrepreneurial tendencies. It was determined that students' critical thinking tendencies significantly predicted their entrepreneurial tendencies. As a result, it can be said that students' critical thinking tendencies affect their entrepreneurial tendencies at a high level and positively.

Keywords:

Critical thinking disposition, entrepreneurial disposition, primary school students

## 1. Introduction

The core purpose of 21st-century skills is to transform individuals into individuals who can 'use' and 'apply' knowledge beyond the norms in a particular context. Given the dynamic nature of the workplace evolving from rapidly changing technologies, it has become of paramount importance for students to be equipped with the skills of creativity and innovation, communication and collaboration, research and information fluency, critical thinking, problem-solving, and digital citizenship (Crosling et al., 2015). As a result, it becomes essential to teach students thinking skills. Today, entrepreneurship is considered one of the critical factors for development. Entrepreneurs create more opportunities in industries like education, medicine, and so on. They provide more options, ultimately positively impacting a generation. *So, what critical thinking is and why it is a must-have asset for all educational entrepreneurs should be discussed.*

The challenge of education in most countries, as in Turkey today, is to build the quality of human resources who have 21st century skills as well as character and a high entrepreneurial spirit. The 21st century skills that must be possessed include problem-solving skills, critical thinking skills, effective communication skills, information and communication technology literacy skills, and collaboration skills. Critical thinking skills are needed by students to be able to solve real problems, not just to memorize concepts. Students must also have self-regulation skills to be able to solve various problems in the entrepreneurial world (Riantoni, Yuliati, &

<sup>1</sup>Corresponding author's address: Afyon Kocatepe University-Sandıklı School of Applied Sciences, Afyonkarahisar /Türkiye  
e-mail: [akkasemine85@hotmail.com](mailto:akkasemine85@hotmail.com)

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Nehru, 2017). Critical thinking ability refers to how to solve a problem and provide a solution to the problem (Putra, Sutadji, & Nurhadi, 2021). Students who can think critically can help with problems in the school or in the class. Solutions can be found to solve the problems that exist at a specific course or in a student's social life. In entrepreneurship, the ability to think critically is useful when determining different solutions so that their success in every field continues. Students with other skills will find it easier to face the demands of the 21st century that are expected to follow the ongoing developments.

### **1.1.Critical Thinking**

Critical thinking is a practical, organized, and operative cognitive process that enables people to improve their understanding of their thoughts, others' ideas, and their skills to explain their opinions (Chaffee, 1994). It refers to using cognitive skills or strategies that increase the probability of a desirable outcome and evaluating the outcomes of thought processes (Halpern, 1998). According to Smith (2003), critical thinking is a type of high-order thinking skill that involves controlled and measured thinking processes. This can be distinguished from low-order thinking, mere attention, and perceptions. Critical thinking is clear, accurate, knowledgeable, reflective, and fair in deciding what to believe or do (Carroll, 2007). Someone who has critical thinking skills can think rationally and clearly. It allows them to perform problem solving, decision-making, analytical thinking, and searching effectively.

A critical thinking skill is a purposeful and self-regulatory judgment resulting in interpretation, analysis, evaluation, and inference. It is an explanation of the evidential, conceptual, methodological, soteriological, or contextual consideration. It is essential as a tool of inquiry. Critical thinking is a pervasive and self-correcting human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, and honest in facing personal biases. The thinker is prudent in making judgments, willing to consider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results that are as precise as the subject and circumstances of inquiry permit (Facione, 1990). Critical thinking emphasizes the ability and tendency to gather, evaluate, and use information effectively. It is also the ability to distinguish fact from judgment and belief from knowledge and skills in elementary inductive and deductive processes, including understanding the formal and informal fallacies of thoughts (Carroll, 2005). Critical thinking enables individuals to see the sub-elements of a problem in detail and to reach the solution with more solid steps.

It is the lifeblood of essential workplace skills, including problem-solving, decision-making, good judgment, and sound analysis. People can develop critical thinking abilities with proper guidance. Therefore, future teachers' thinking abilities can be enhanced if it is possible to consider notions such as looking for novel approaches and rejecting myths (Pithers and Soden, 2010). According to Potts (1994), the primary critical thinking skills are the ability to find analogies and relationships between pieces of information, determine the relevance and validity of the information that could be used for structuring and solving problems, and find and evaluate solutions or alternative ways of treating problems. It involves the analysis, synthesis, and logical reasoning of facts and information, investigating different alternatives, and seeking out different kinds of information to evaluate and eventually conclude on an issue. Schoenberg (2007) identifies some critical thinking skills to include: forming assumptions, asking critical thinking questions, identifying frames of reference, methodological belief, identifying causal reasoning, metacognition, and business ethics, as well as the ability to manage stress.

Critical thinking enables students to identify and turn such problems into opportunities. According to Obi (2005), skill helps students perform a given task or piece of work at a given time with the minimum number of errors. Students are said to be skilled if they can do something well within a specified context and within particular domains (Osinem, 2008). When students gain critical thinking skills, they can empower themselves for entrepreneurial development. A critical thinking skill is a kind of expertise or practical ability to do or perform something effectively and efficiently. In order to be successful in today's world, students must possess critical thinking skills. They are necessary to analyze and respond to ever-more complex situations and to recognize and understand them. By means of this thinking skill, students can analyze their thinking and present evidence for their ideas instead of accepting personal opinions as substantial proof. When students develop critical thinking skill, they gain various benefits, including improved learning abilities and social skills. A student with strong critical thinking skills will challenge the given information, dismiss any

untrustworthy logic, and ask about the information's sources. So, it is precious for students because it allows them to write essays and assignments without personal prejudice.

Neba (2019) stresses that critical thinkers are always curious about everything in life and possess strong interests. Critical thinking skills require continuously asking questions and wanting to learn more about why, who, what, when, and where, as well as everything else that can assist them in making sense of a circumstance or notion. They will never accept anything at face value. They question everything. Critical thinking skills will help students improve their research abilities by observing, analyzing, synthesizing, and conducting detailed experiments with every element for effective results. It is essential for empowering learners to make choices and develop their views. Being a critical thinker can help students better comprehend the perspectives of others and become more open-minded to different points of view. Students learn how to communicate their feelings. When a specific topic arises in the mind, no matter what the subject, the student should think about it objectively. The first step is to mentally draw a table with the advantages and disadvantages of each side. This will assist a student in gaining better knowledge of the subject. Any subsequent decisions will be based on logical reasoning. Therefore, students who acquire critical thinking skills can use this skill in many areas to facilitate both their academic and daily lives.

## **1.2. Entrepreneurship**

Entrepreneurship refers to the motivation and capacity of people to determine an opportunity independently or within an organization and to go for that opportunity to create a new value or achieve success. Entrepreneurship is related to people and their preferences and activities for establishing, taking over, or running an enterprise or participating in the strategic decision-making mechanisms of a company. Entrepreneurs benefit from creativity or innovations to get into the market, compete, and change or create a new market, and they are a heterogeneous group from all social segments. Entrepreneurial behavior includes such standard features as readiness for taking risks and independence (CEC, 2003). Entrepreneurship is the key to a country's economic growth (Faggian et al., 2016). UNESCO (2000) describes entrepreneurship as the ability and willingness of an individual to seek investment opportunities and establish and run an enterprise successfully by performing all the business functions related to a product or service. Entrepreneurship is the resourcefulness and opportunity to critically address economic, social, and environmental problems sustainably.

The idea of infusing entrepreneurship into education has spurred much enthusiasm in recent decades. A myriad of effects have been stated to result from this, such as economic growth, job creation, increased societal resilience, individual growth, increased school engagement, and improved equality (OECD, 2015). The collective importance of entrepreneurs, particularly within the emerging economies of nations around the globe, highlights the importance of education in entrepreneurship for their citizens (Global Entrepreneurship Monitor, 2014). The term enterprise education is primarily used in the United Kingdom. It is defined as focusing more broadly on personal development, mindset, skills, and abilities, whereas entrepreneurship education focuses more on the specific context of setting up a venture and becoming self-employed (QAA, 2012; Mahieu, 2006). An entrepreneurial education system that enables students to learn and reflect on the entrepreneurial process effectively. The nature of this process involves entrepreneurial actions and experiences that represent the degree of creativity, ideation, opportunity analysis, resilience, and thinking in different ways.

The belief that entrepreneurship could not be taught changed in the early 1980s when some began to question this belief, and a paradigm shift evolved towards thinking that entrepreneurship was "not magical or mystical" at all, and research began to flourish (Carlsson et al., 2013). The importance and necessity of entrepreneurial education reveal clearly the need to keep up the pace of demanding and steadily increasing the nature of producing a workforce integrated into entrepreneurial and 21st-century skills (O'Connor, 2013). Therefore, entrepreneurial education to enable experiential learning for students has to be given attention in policy paradigms intending to produce enriched human capital built on entrepreneurial skills and competencies (Johnson et al., 2015). Entrepreneurship education should support learners in exploring and developing critical entrepreneurial values that are considered psychological and include characteristics such as intuition, extroversion, risk-taking, flexibility, and a sense of control (Crosling et al., 2015). Drucker (1985) claims that entrepreneurship is a discipline that can be taught and learned like any other discipline. Entrepreneurship

education teaches students how to handle real-world problems at all levels of education. It focuses on mindset, personal development, and preparing students for adapting to changes in environments (Quality Assurance Agency, 2018). Entrepreneurship education has recently become a process in which individuals are equipped with capabilities they can use in many areas of their lives. In this context, entrepreneurship covers the capability of individuals to transform their ideas into action. Entrepreneurship includes creativity, innovation, risk-taking, and planning and managing projects (EC, 2011).

Entrepreneurship education should not be considered necessary only for tertiary-level students; it should also include primary school students to provide an opportunity for those who may not be able to attend school for whatever reason. While participating in entrepreneurial education, students can find their passion, understand their educational needs, and identify the right learning approach to help them succeed and develop their path. The importance of content in the development of employable skills as well as teaching and learning strategies is also critical for student success. Access to information, relevance, and the ability to link learning to real-life experiences help students foster their future skills.

### **1.3. Critical Thinking and Entrepreneurship**

Critical thinking skills are crucial for everyday survival and successful decision-making from an entrepreneurial point of view (Brazeau, 2013; Mohan et al., 2015). Many people possess the skills necessary for critical thinking but fail to utilize them due to the unstructured or 'lazy' nature of their decision-making processes (Fahim and Masouleh, 2012). It has been argued that entrepreneurs are specifically adept at what could be thought of as connecting the dots, and therefore it should be the pedagogical goal of any education level to seek ways to enhance soft skills such as critical thinking (Al-Atabi and DeBoer, 2014; Mitchell, 2005). Encouraging students to think entrepreneurially includes a certain amount of critical thinking enhanced quite remarkably through problem-solving-based exercises (Krueger, 2001).

In the modern competitive educational context, critical thinking skills allow entrepreneurs to recognize various scenarios with the best chance of accomplishment. Because entrepreneurship has evolved from mere business to creating innovative ideas and processes, teachers and students might also benefit from the concept. Additionally, critical thinking will ensure a realistic insertion of one's entrepreneurial actions within the broader framework of the information society's changes. It is assumed that an increased level of critical thinking skills would be a vital component of the entrepreneurial personality, even if the modern entrepreneur must be willing to take risks (Bungău and Borza, 2020). Going through primary education is likely a factor favoring the development of critical thinking skills. In Türkiye, the updated teaching programs encourage critical thinking, creative thinking, communication, research-questioning, problem-solving, information technologies, entrepreneurship, and using the Turkish language correctly and effectively with an approach that puts the students in focus (MEB, 2005). One of the basic skills in primary school programs, entrepreneurship is one of the critical factors for individuals to reach information, use it, and apply it in new situations (Aytaç, 2006). So, it aims to examine a preliminary investigation of the perception of students with entrepreneurial intentions on the usefulness of developing critical thinking through education.

Critical thinking is the process of actively and intentionally conceptualizing information gathered via experience, reasoning, and observation and using that information to guide action and belief. While critical thinking is an essential skill for students at all levels, entrepreneurs who know how to leverage it can create more opportunities in their school or social lives. Entrepreneurs with outstanding critical thinking skills tend to think differently. For instance, a student with an entrepreneurial point of view and critical thinking skills knows how to get curious and ask questions. Additionally, they have alternative thinking skills. Entrepreneurs who think critically know how to lean into obscurity, adapt, and keep moving—even when things don't turn out as planned or unexpected information arises. **They tend to collaborate and know how to communicate with others. This brings sharing together.** Finally, critical thinking skills equip entrepreneurs to focus on the big picture. Instead of getting caught up in the minutia, they look at the long term, which allows them to grow and be successful in every field of life. Therefore, the purpose of this research was to examine the relationship between primary school students' critical thinking and entrepreneurial tendencies. The following sub-problems were constructed:

- What are primary school students' critical thinking and entrepreneurial tendencies?

- Do primary school students' critical thinking and entrepreneurial tendencies differ significantly by gender and grade level?
- Is there a significant relationship between the critical thinking and entrepreneurial tendencies of primary school students?
- Do primary school students' critical thinking tendencies predict their entrepreneurial tendencies?

## 2. Methodology

### 2.1. Research Model

The research used the relational screening model because the relationship between the "critical thinking tendency" and "entrepreneurial tendency" variables was examined. Relational screening models aim to determine the presence and level of change between two or more variables and to specify the relationships between the variables. The relational screening model does not provide a natural cause-and-result relationship but offers an opportunity to predict the other in the absence of knowing the first (Ayık and Ataş-Akdemir, 2015; Karasar, 2006).

### 2.2. Research Sample

The sample for the research consisted of 373 primary school students. The sample was determined by a simple random sampling method. Simple random sampling is a method of selecting a sample comprising several sampling units out of the population with an N number of sampling units so that every sampling unit has an equal chance of being chosen (Singh, 1996). A total of 236 (%66.3) students were in third grade, and 137 (%36.7) were in fourth grade. Their ages varied between 9 and 11 years old. Of the students, 222 (%59.5) were female, and the rest (%40.5) were male.

### 2.3. Data Collection Tools and Procedure

In the research, the "Critical Thinking Tendency Scale for Primary School Students" developed by Uluçınar and Akar (2021) was used to measure students' critical thinking tendencies, and the "Entrepreneurial Tendency Inventory for Children" developed by Yurtseven and Ergün (2018) was used to measure entrepreneurial tendencies. The data were collected voluntarily with the consent of the participants. The students were informed about how to fill in the inventories of the researchers. Data were collected by allowing sufficient time.

**Critical Thinking Tendency Scale for Primary School Students:** The Critical Thinking Scale was developed with third- and fourth-grade primary school students. An exploratory factor analysis was applied to determine the validity of the scale. It was developed as a four-Likert type. As a result, 18 items and four factors (open-mindedness, curiosity, questioning or skepticism, and objectivity) were found. Afterwards, confirmatory factor analysis was performed, and the Chi-square model test ( $\chi^2$ , p,  $\chi^2/sd$ ), RMSEA, GFI, TLI, CFI, and SRMR fit indices were found to be in the acceptable or perfect range. As a result of the reliability analysis, the item-total correlations were above the .25 value. Values for an item-total correlation can also help indicate discrimination in your questions: values between 0 and 0.19 may indicate that the question is not discriminating well; values between 0.2 and 0.39 indicate good discrimination; and values of 0.4 and above indicate excellent discrimination (Lord and Novick, 1968). So, it had good discrimination. Additionally, Cronbach's Alpha coefficients and internal consistency parameters were found to be over .60. These results showed that the scale is valid and reliable (Cronbach, 1951) for primary school third and fourth grade students. In this study, the total Cronbach's Alpha value of the Critical Thinking Scale was 82.9, and the sub-dimensions of it were respectively 77.7, 76.2, 62.6, and 75.4. It is seen that these values provide sufficient reliability.

**Entrepreneurial Tendency Inventory for Children:** Exploratory factor analysis was applied to determine the scale's construct validity, which was developed in a five-point Likert type, by applying it to 4th-grade primary school students. As a result, a scale consisting of 24 items and four factors (successfulness, problem solving, innovativeness, and self-confidence) was obtained. The variance explanation percentages of these four factors were 14.16%, 12.25%, 11.57%, and 8.45%, and the total was 46,43%. As a result of the reliability analysis, the total Cronbach's Alpha coefficient of the scale was .89; sub-dimensions were found as .82, .77, .72, and .61. Additionally, Pearson correlation analysis between factors and item-total and item-remainder correlations were found to be significant. Accordingly, it was determined that the validity and reliability values of the scale

were within an acceptable range (Cronbach, 1951). As a result of the reliability analysis of the scale, the total Cronbach alpha coefficient was found to be .91. The reliability values of the sub-dimensions were .72, .76, .76, and .69, respectively. It is seen that these values provide sufficient reliability.

**2.4. Data Analysis**

In the analysis of the data, first of all, the sums of scales were checked to determine whether the data showed a normal distribution. Additionally, the Skewness and Kurtosis values of the sub-dimensions were calculated. For the Children's Entrepreneurial Tendency Inventory total, the Skewness value was calculated as -.627 and the Kurtosis value as .215. For the sub-dimensions of the scale, the Skewness values were found to be between -.866 and .392, and the Kurtosis values were between .593 and 315. The Skewness value for the total of the Critical Thinking Scale was calculated as .157 and the Kurtosis value as -.103. The Skewness values for the sub-dimensions were between -.576 and -.274, and the Kurtosis values were between -.689 and -.404. These values were found to be between +1.96 and -1.96. Corder and Foreman (2009) stated that the data between +1.96 and -1.96 showed a normal distribution. Additionally, Q-Q Plots, line charts, and mode, median, and mean values were examined (Pallant, 2020). Accordingly, it was determined that the data showed a normal distribution, and parametric tests were used in the analysis. Descriptive statistics tests, t-tests, one-way ANOVA tests, Pearson correlation analysis, and regression analysis were applied in the analyses. Analyses were used at the .05 significance level.

**2.5. Ethical**

This study was received from Afyon Kocatepe University Social and Human Sciences Ethics Committee.

**3. Findings**

The findings obtained in the research are presented below in line with the sub-problems.

1. What are primary school students' critical thinking and entrepreneurial tendencies?

**Table 1.** Descriptive Statistics On The Levels Of Critical Thinking And Entrepreneurial Tendencies

Scale/Variable	Sub-Dimensions / Total	N	MS	X	SS	X/MS
Critical Thinking Tendency	1. Open-mindedness	373	4	12,630	2,665	3.16
	2. Curiosity	373	5	14,986	3,473	2.99
	3. Questioning/ scepticism	373	5	15,455	2,938	3.09
	4. Objectivity	373	4	9,361	3,125	2.34
	Total	373	18	52,434	8,646	2.91
Entrepreneurial Tendency	1. Successfulness	373	7	30.008	4.026	4.28
	2. Problem Solving	373	6	24.463	4.265	4.07
	3. Innovativeness	373	6	24.002	4.603	4.00
	4. Self-confidence	373	5	19.241	3.888	3.84
	Total	373	24	97.715	14.685	4.07

As seen in Table 1, the average score of students' critical thinking tendency is at the "most of the time" level ( $\bar{x}=2.91$ ). The values of the sub-dimensions are as follows: open-mindedness is  $\bar{x}=3.16$ , inquisitiveness is  $\bar{x}=2.99$ , and question or skepticism is  $\bar{x}=3.09$ . They are at the level of "most of the time". The value of the objectivity sub-dimension is  $\bar{x}=2.34$ , and it is at the level of "sometimes" (1.00-1.75: never, 1.76-2.50: sometimes, 2.51-3.25: often, and, 3.26-4.00: always). The total mean score on the Entrepreneurial Tendency Inventory for Children is  $\bar{x}=4.07$ . All sub-dimensions of the entrepreneurship tendencies scale are as follows: successfulness is  $\bar{x}=4.28$ , problem-solving is  $\bar{x}=4.07$ , innovativeness is  $\bar{x}=4.00$  and self-confidence is  $\bar{x}=3.87$ . The answers are at the "mostly" level (1.00-1.80: never, 1.81-2.60:sometimes, 2.61-3.40:sometimes, 3.41-4.20: mostly, and, 4.21-5.00: always).

2. Do primary school students' critical thinking and entrepreneurial tendencies differ significantly by gender and grade level?

**Table 2.** *The T-Test Results According to the Variable of Gender*

Scale/Variable	Sub-Dimensions/Total	Gender	N	X	SS	t	p
Critical Thinking Tendency	1. Open-mindedness	Female	222	12,9640	2,55058	2.964	.003
		Male	151	12,1391	2,76174		
	2. Curiosity	Female	222	15,1577	3,61463	1.154	.249
		Male	151	14,7351	3,25106		
	3. Questioning/ scepticism	Female	222	15,5405	3,01515	.675	.500
		Male	151	15,3311	2,82777		
	4. Objectivity	Female	222	9,1757	3,21348	-1.397	.163
		Male	151	9,6358	2,98101		
	Total	Female	222	52,8378	8,63177	1.093	.275
		Male	151	51,8411	8,66340		
Entrepreneurial Tendency	1. Successfulness	Female	222	30,6261	3,59611	3.511	.001
		Male	151	29,0993	4,44485		
	2. Problem Solving	Female	222	25,0360	4,15520	3.180	.002
		Male	151	23,6225	4,29844		
	3. Innovativeness	Female	222	24,4955	4,56204	2.509	.013
		Male	151	23,2781	4,65641		
	4. Self-confidence	Female	222	19,6622	3,77636	2.553	.011
		Male	151	18,6225	3,97952		
	Total	Female	222	99,8198	14,11600	3.402	.001
		Male	151	94,6225	15,00300		

As seen in Table 2, when students' critical thinking and entrepreneurial tendencies are analyzed in terms of gender, it is found that there is no significant difference in the critical thinking tendencies of female and male students ( $t=1.093$ ;  $p>.05$ ). However, there is a significant difference in entrepreneurial tendencies ( $t=3.402$ ;  $p<.05$ ). The entrepreneurial tendencies of female students ( $\bar{x}=99.81$ ) are higher than those of male students ( $\bar{x}=94.622$ ). Additionally, while there is a significant difference in favor of girls in the open-mindedness dimension, there is no significant difference in the sub-dimensions of inquisitiveness, questioning or skepticism, and objectivity. There is a significant difference in favor of girls in all sub-dimensions of students' entrepreneurial tendency. The entrepreneurial tendencies of girls are higher than those of boys.

**Table 3.** *The T-Test Results according to the Variable of Grade*

Scale/Variable	Sub-Dimensions/Total	Grade	N	X	SS	t	p
Critical Thinking Tendency	1. Open-mindedness	3rd grade	236	12,5763	2,68774	-511	.610
		4th grade	137	12,7226	2,63386		
	2. Curiosity	3rd grade	236	14,8008	3,47247	-1.357	.176
		4th grade	137	15,3066	3,46529		
	3. Questioning/scepticism	3rd grade	236	15,5339	2,94397	.673	.501
		4th grade	137	15,3212	2,93542		
	4. Objectivity	3rd grade	236	9,2924	3,06582	-.564	.573
		4th grade	137	9,4818	3,23379		
	Total	3rd grade	236	52,2034	8,38343	-.676	.499
		4th grade	137	52,8321	9,10040		
Entrepreneurial Tendency	1. Successfulness	3rd grade	236	30,1992	4,05055	1.204	.229
		4th grade	137	29,6788	3,97776		
	2. Problem Solving	3rd grade	236	24,6907	4,15263	1.350	.178
		4th grade	137	24,0730	4,44018		
	3. Innovativeness	3rd grade	236	24,3517	4,57366	1.916	.056
		4th grade	137	23,4015	4,68957		
	4. Self-confidence	3rd grade	236	19,3008	3,73918	.388	.698
		4th grade	137	19,1387	4,14477		
	Total	3rd grade	236	98,5424	14,33825	1.429	.154
		4th grade	137	96,2920	15,21327		

As seen in Table 3, when students' critical thinking and entrepreneurial tendencies are analyzed in terms of grade, it is found that there is no significant difference in actual critical thinking tendencies ( $t=-.676$ ;  $p>.05$ ) and

its sub-dimensions. Likewise, it is determined that there is no significant difference in the total entrepreneurial tendencies of the students ( $t=1.429$ ;  $p>.05$ ) and their sub-dimensions.

3. Is there a significant relationship between primary school students' critical thinking and entrepreneurial tendencies?

**Table 4.** The Results of Pearson Correlation

		Critical Thinking Tendency				Entrepreneurial Tendency					
		1. Open-	2. Curiosity	3. Questioning/ scepticism	4. Objectivity	Total	1. Successfulness	2. Problem Solving	3. Innovativeness	4. Self- confidence	Total
Critical Thinking Tendency	Open-mindedness	1	,562**	,524**	,159**	,770**	,589**	,605**	,628**	,577**	,688**
	Curiosity		1	,505**	,143**	,798**	,495**	,530**	,506**	,511**	,585**
	Questioning/scepticism			1	,136**	,753**	,505**	,511**	,508**	,502**	,580**
	Objectivity				1	,514**	,139**	,174**	,189**	,221**	,207**
	Total					1	,602**	,636**	,638**	,633**	,719**
Entrepreneurial Tendency	Successfulness						1	,749**	,657**	,655**	,872**
	Problem Solving							1	,686**	,675**	,891**
	Innovative-ness								1	,678**	,874**
	Self-confidence									1	,854**
	Total										1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

As seen in Table 4, it is determined that there is a positive and highly significant relationship between students' critical thinking and entrepreneurial tendencies ( $r=.719$ ). Correlation coefficients indicate a low correlation if it is 0-0.29, a medium correlation of 0.30-0.64, a high correlation of 0.65-0.85, and a very high correlation of 0.85-1.00 (Ural and Kılıç, 2013). When the sub-dimensions of critical thinking and entrepreneurial tendencies are examined, it is determined that there is a positive and moderately significant relationship between primary school students' "total critical thinking tendencies" and all sub-dimensions of entrepreneurial tendencies (successfulness, problem-solving, innovativeness, and self-confidence). Additionally, fundamental entrepreneurial and critical thinking tendencies have a high relationship with open-mindedness, a moderate relationship with inquisitiveness and questioning or skepticism, and a low-level relationship with objectivity sub-dimensions.

4. Do primary school students' critical thinking tendencies predict their entrepreneurial tendencies?

**Table 5.** Results of Regression Analysis

Independent variable	Dependent variable	B	Std. Error	( $\beta$ )	t	p	R	R <sup>2</sup>	F	p
Critical Thinking Tendency	Entrepreneurial Tendency	33,70	3,258		10,34	.00				
		1,22	,061	,719	19,91	.00	,719 <sup>a</sup>	,517	396,566	,00 <sup>a</sup>

a. Predictors: (Constant), Critical Thinking Tendencies Total Dependent Variable: Entrepreneurial Tendencies Total

As seen in Table 5, students critical thinking dispositions significantly predict their entrepreneurial tendencies by 51% ( $R=.719$ ;  $R^2=.517$ ) ( $p<.05$ ). In other words, in the regression model, the linear relationship between students' critical thinking dispositions (the predictor or independent variable) and entrepreneurial tendencies



(the predicted or dependent variable) is statistically significant. According to Cohen (1988), the effect size of ".10" explains 1% of the total variance as a common effect. The effect size of ".30" explains 9% of the total variance, and this is a moderate effect. The effect size of ".50" explains 25% of the total variance, which is expressed as a high effect (Field, 2009). Accordingly, critical thinking tendencies explain approximately 25% of the variation in entrepreneurial tendencies.

#### 4. Conclusion and Discussion

In this part of the study, the results of the findings will be discussed and evaluated in the context of the research questions. The first sub-problem of the research was determined to be "What are primary school students' critical thinking and entrepreneurial tendencies?". According to the findings on this question, the average scores of primary school students regarding their critical thinking disposition are at the level of "most of the time". Open-mindedness, curiosity, and questioning/skepticism sub-dimensions are at the level of "often", and the sub-dimension of objectivity is at the level of "sometimes". The total average scores of the "Successfulness, problem-solving, innovativeness, and self-confidence sub-dimensions" are at the "mostly" level. In this context, it can be said that primary school students' critical thinking and entrepreneurial tendencies are not very high but at a high level. Critical thinking allows the individual to use their full potential and internal sources of psychological self-regulation. Mushtavinskaya (2013) says that with the help of critical thinking, such issues as the effectiveness of activities and adaptation to unfavorable economic and social conditions for developing domestic entrepreneurship can be solved. Karahan and his friends (2023), in their study, found that primary school students' critical thinking disposition level was higher than the mean. Additionally, Kurtdede Fidan and Argıç (2022) expressed in their study that the entrepreneurship tendencies of the students are generally high. Both in this study and other studies, it can be seen that the level of critical thinking skills and entrepreneurship among primary school students is high. Griffin et al. (2012) stressed that critical thinking skills and entrepreneurship are essential tools for students to fulfill their professional, social, or ethical duties at school and in society; therefore, they are basic skills that individuals should develop. In other words, developing critical thinking skills and entrepreneurship at the primary school level is crucial for students.

The second sub-problem of the research was determined as "Do primary school students' critical thinking and entrepreneurial tendencies differ significantly in gender and grade level?". According to the findings on this sub-problem, while students' critical thinking tendencies do not differ significantly by gender, their entrepreneurial tendencies show significant differences. As in this study, Kurtdede Fidan and Argıç (2022) found that gender has a significant effect on having an entrepreneurial tendency. However, Çetin and his friends (2017) concluded that there are no significant correlations between the gender of primary school students and their entrepreneurial skills and intentions and that gender is not one of the factors significantly affecting the students' entrepreneurial skills. This situation can be interpreted as the gender change affecting the critical thinking and entrepreneurial skills of primary school students. Additionally, in this study, it was found that critical thinking and entrepreneurial tendencies do not differ significantly by grade level. In this context, it is found that there is no effect of gender and class level on students' critical thinking dispositions; however, it can be said that the gender factor affects entrepreneurial tendencies. Ead et al. (2022), in their study, evaluated the ability of the science students studying at Cairo University concerning entrepreneurship through quantitative measurements of their critical thinking skills. To achieve this aim, the authors used a prepared questionnaire consisting of four sets of questions, where each set included five questions. The four sets evaluated students' practical thinking skills, problem-solving skills, entrepreneurship skills, and relationships between thinking and entrepreneurship. With 300 male and female students, a quantitative research methodology was applied. The results reflect the importance of this study for critical thinking among science students, indicating a significant impact on their attitudes regarding acquiring entrepreneurial skills. It was concluded that if today's students are to become entrepreneurs of tomorrow, they must learn to think critically because this will help them evaluate their opportunities.

The third sub-problem of the research was determined as "Is there a significant relationship between the critical thinking and entrepreneurial tendencies of primary school students?". According to the findings, there is a positive and highly significant relationship between students' critical thinking and entrepreneurial tendencies. It is determined that there is a positive and moderately significant relationship between students' total critical thinking and all sub-dimensions of entrepreneurial tendencies (successfulness, problem-solving,

innovativeness, and self-confidence). Additionally, it is determined that "total entrepreneurial tendencies" and "critical thinking tendencies" have a high relationship with open-mindedness, a moderate relationship with curiosity, questioning, and skepticism, and a low-level relationship with objectivity sub-dimensions. Therefore, it can be said that as primary school students' critical thinking tendencies increase, their entrepreneurial tendencies also increase. Self-regulation and critical thinking provide an opportunity for an individual entrepreneur to interact with the professional environment selectively, create individual conditions for relationships, show personal meaning, and use the best strategies for independent activity (Kamgar and Jadidi, 2016; Kitsantas et al., 2019). Similarly, Kabatiah et al. (2021) aimed in their research to carry out project-based learning on entrepreneurship subjects to improve students' critical thinking abilities. This study is pre-experimental, and the design used to measure critical thinking ability is a one-shot case study. Study data are analyzed using quantitative descriptive analysis. Research shows that project-based learning improves students' critical thinking skills. Students' critical thinking skills improved by an average of 81.86% in the first meeting, 83.12% in the second meeting, and 86% in the third meeting. This means that the category goes from good to very good.

The last sub-problem of the research was defined as "Do primary school students' critical thinking tendencies predict their entrepreneurial tendencies?". According to findings, students' critical thinking tendencies significantly predict their entrepreneurial tendencies by 51%. In other words, the linear relationship between students' critical thinking and entrepreneurial tendencies is statistically significant. Critical thinking dispositions explain about 25% of the variation in entrepreneurial tendencies. In this context, it can be said that primary school students' critical thinking dispositions affect their entrepreneurial tendencies at a high level and positively. According to Molokhina et al. (2021), there is a confirmation of two hypotheses of their research work about the existence of features of the development of critical thinking in individual entrepreneurs with different styles of self-regulation and the relationship between the styles of self-regulation and the features of critical thinking. The lack of internal freedom and the ability to think critically can cause the individual entrepreneur to depend on the circumstances and engage in ineffective behavior. The independence of individual entrepreneurs is the dominant motivation, as are the social and psychological characteristics of self-awareness. Critical thinking helps an entrepreneur feel like a competitive person and a specialist who can manage circumstances.

In another piece of research conducted by Gunarjo and Fenno (2021), they aimed to determine critical thinking skills in innovative problem-solving during physics entrepreneurship courses. The critical thinking skills measured by tests of critical thinking skills show different results on each indicator of critical thinking, which range from low to a deficient category, but the average overall skills were in the low category. The results of the study provide an overview for lecturers and education observers regarding the condition of students' critical thinking skills in the physics education department at a university in the city of Palangkaraya in the Physics Entrepreneurship course. The average achievement of critical thinking skills of students of the department of physics education at a university in the city of Palangkaraya in the Physics Entrepreneurship course is in a low category, namely 56.9%. This shows that the critical thinking skills of students' interpretation, analysis, evaluation, inference, explanation, and self-regulation meet shallow criteria. The results of this study can be used as a reference for designing and developing a learning process that can improve students' critical thinking skills. Similarly, in this study, it is seen that the critical thinking skills of primary school students affect their entrepreneurial skills. This situation can be evaluated as such: as students gain critical thinking skills, their entrepreneurial skills will increase. Riantoni et al. (2017) expressed that students need critical thinking skills to solve real problems, not just to memorize concepts; they also need self-regulation skills to be able to solve various problems in the entrepreneurial world. The results of relevant research show that most students do not apply physics concepts to get the answer; they only refer to the involved variables and random methods and memorize the same problem they have ever faced before. So, it is important to teach students both critical thinking skills and entrepreneurial skills.

Conclusionally, in this study, which deals with the relationship between critical thinking skills and entrepreneurship skills of primary school students, it has been determined that there is a positive relationship between students' critical thinking and entrepreneurship skills. This shows that as primary school students gain critical thinking skills, their entrepreneurship can increase. In a changing and developing world, individuals in almost every sector are expected to have 21st-century skills. As Deker (2020) says,

entrepreneurship education has become an important and fast-growing research area, contributing to understanding and acknowledging global and national trends and developing future educational policies and actions. Critical thinking improves interaction with others, efficiency, and growth in professional activities. For this reason, it is important to teach these skills from basic education to upper education levels and to ensure their sustainability. In future studies, the relationship between critical thinking skills and entrepreneurship among students at different learning levels can be discussed. In addition, qualitative studies can be carried out by designing activities that will develop these skills.

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