

A Quantitative Study on the Entrepreneurial Characteristics and Critical Thinking Tendencies of Geography Teachers*

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Abstract

This study was conducted to determine the entrepreneurial characteristics and critical thinking tendencies of geography teachers. The sample consists of geography teachers working in secondary education institutions located in the Başakşehir district. Quantitative data was used in the research, and the relevant literature was reviewed systematically. The California Critical Thinking Disposition Inventory and the Entrepreneurship Scale were utilized as data collection instruments. Statistical processes were performed using the SPSS 23.0 program. Descriptive findings were evaluated through numbers, percentages, means, and standard deviations. The entrepreneurial characteristics and critical thinking tendencies of geography teachers were analyzed based on variables such as gender, seniority, educational background, age, position, and faculty of graduation. The results indicated that geography teachers demonstrated a high level of entrepreneurial characteristics. Their critical thinking tendencies, on the other hand, were observed to be at a moderate level. Consequently, it was concluded that geography teachers with strong entrepreneurial characteristics also exhibited higher levels of critical thinking. The findings were discussed, and recommendations were made, including increasing entrepreneurship courses, enriching related departments, encouraging graduate education for teachers, and prioritizing new research examining the relationship between entrepreneurship and various thinking styles.


Keywords: Entrepreneurship, Critical Thinking, Geography Teacher.


To cite this article:

Akdemir, M., & Balcı, A. (2024). Quantitative Study on the Entrepreneurial Characteristics and Critical Thinking Tendencies of Geography Teachers. *Innovative Educational Research (INNER)*, *Innovative Educational Research (INNER)*, 6, (2), 188-212.

Article Type	Received	Accepted	Published Online
Research Article	11.01.2024	12.06.2024	12.30.2024

*This article is derived from the master's thesis of first author entitled 'Investigation of Entrepreneurial Characteristics and Critical Thinking Tendencies of Geography Teachers'.

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The concept of entrepreneurship, which gained significant popularity in the first quarter of the 21st century, has become a topic of interest across diverse sectors of society. The ongoing debate on whether entrepreneurship is an innate trait, or an acquired skill has been the focus of numerous studies, many of which reveal a positive relationship between entrepreneurship education and entrepreneurial activities. As a result, entrepreneurship has increasingly influenced and shaped educational practices worldwide. Recent advancements in science and technology have also contributed to shifts in the perception of entrepreneurship, emphasizing intellectual productivity and individual creativity over traditional entrepreneurial traits (Yüksel, Cevher, & Yüksel, 2015, p. 144).

Today, nations aim to cultivate individuals who are capable of critical thinking and creative production, setting high-level cognitive skills as core educational objectives (Köstekçi, 2016, p. 3). In this context, innovative educational plans have been developed to address the rapid evolution of knowledge and the demand for students with entrepreneurial and critical thinking competencies (Çelik, 2014, p. 1; Kurnaz, 2013, p. 3). This paradigm shift has placed significant responsibilities on educators, particularly regarding their own capacity to model and foster these attributes in students (Kürüm, 2002, p. 2).

Entrepreneurship has been frequently highlighted by professionals ranging from business executives to academics and policymakers, yet the literature predominantly focuses on fields such as business, economics, and labor studies. Within the education sector, studies on entrepreneurship typically center around prospective teachers. For example, prior research indicates that entrepreneurship-related studies largely target students in business-related disciplines or teacher candidates (Çelik, 2014; Sabuncu, 2017; Avşar, 2007). Studies specifically addressing geography teachers are notably scarce, highlighting the necessity for further exploration. Additionally, it has been observed that the questions posed to students and teachers in entrepreneurship studies differ significantly. While student-focused studies often explore concepts such as establishing businesses or profit and loss, teacher-focused studies investigate their entrepreneurial skills and capacities.

Given these gaps in the literature, this study aims to assess the entrepreneurial characteristics and critical thinking tendencies of geography teachers. It also seeks to address the following research questions:

1. What are the levels of entrepreneurial characteristics and critical thinking tendencies among geography teachers?
2. Do entrepreneurial characteristics vary by gender, faculty of graduation, seniority, educational level, position, or age?
3. Do critical thinking tendencies vary by gender, faculty of graduation, seniority, educational level, position, or age?
4. Is there a relationship between entrepreneurial characteristics and critical thinking tendencies?

Methodology

Research design

In this study, a correlational survey model was used. This model was chosen to determine the existence and/or degree of co-variation between two or more variables (Karasar, 1991, p. 81).

Sample

A convenience sampling method was employed in the research. This method allows the researcher to quickly and easily reach the desired number of participants to form the study group. The sample of the study consists of 60 geography teachers working in secondary schools in Istanbul's Başakşehir district during the 2018-2019 academic year. Of the participating teachers, 38 (63.3%) were male, and 22 (36.7%) were female. Their seniority distribution was as follows: 3 teachers (5.0%) had 0-3 years of experience, 19 (31.7%) had 4-7 years, 18 (30.0%) had 8-12 years, 15 (25.0%) had 13-20 years, and 5 (8.3%) had 21 years or more. Regarding age, 31 participants (51.7%) were in the 24-33 age group, 23 (38.3%) were in the 34-43 age group, and 6 (10.0%) were in the 44-54 age group. A majority of the participants, 56 (93.3%), were teachers, while 4 (6.7%) were assistant principals. In terms of educational background, 35 (58.3%) graduated from faculties of education, and 25 (41.7%) graduated from faculties of arts and sciences (Table 1).

Table 1

Demographic Data of Participating Geography Teachers: Frequency (f) and Percentage (%) Values

Characteristics	Groups	f	%
Gender	Male	38	63.3
	Female	22	36.7
Seniority	0-3 years	3	5.0
	4-7 years	19	31.7
	8-12 years	18	30.0
	13-20 years	15	25.0
	21 years or more	5	8.3
Educational Level	Bachelor's degree	38	63.3
	Master's degree	22	36.7
Age	24-33 years	31	51.7
	34-43 years	23	38.3
	44-54 years	6	10.0
Position	Teacher	56	93.3
	Deputy Principals	4	6.7
Faculty	Faculty of Education	35	58.3
	Faculty of Arts & Sci.	25	41.7

Data Collection Tools

In this study, a personal information form was used alongside the "California Critical Thinking Disposition Inventory (CCTDI)" and the "Entrepreneurship Scale."

California Critical Thinking Disposition Inventory (CCTDI)

The scale was originally developed by Facione et al. in 1998 and adapted into Turkish by Kökdemir (2003), including validity and reliability studies. The inventory comprises 7

dimensions and 75 items. Internal consistency coefficients (Cronbach's alpha) for subscales range from .60 to .78, with an overall alpha coefficient of .90 for the total scale. After adaptation to Turkish, the inventory consists of 51 items and 6 sub-dimensions, measured on a 6-point Likert scale. These dimensions include analyticity, open-mindedness, inquisitiveness, self-confidence, truth-seeking, and systematicity. Scores below 240 indicate low critical thinking tendencies, scores between 240-300 are considered positive, and scores above 300 signify high tendencies (Kökdemir, 2003).

Entrepreneurship Scale

Developed by İsa Deveci and Salih Çepni, this scale measures entrepreneurship characteristics across five dimensions: risk-taking, innovativeness, self-confidence, opportunity recognition, and emotional intelligence. The scale's reliability was tested through Cronbach's alpha and test-retest methods, yielding a minimum alpha coefficient of .77 and a minimum test-retest correlation of .66 (Deveci & Çepni, 2015). The scale consists of 38 items, and the maximum attainable score is 190, with higher scores indicating higher levels of entrepreneurship.

Data Collection

The study was limited to responses to the "Entrepreneurship Scale" and "Critical Thinking Disposition Inventory" obtained from geography teachers working in secondary schools in Başakşehir district during the 2018-2019 academic year. Surveys were administered after obtaining necessary permissions and were completed through face-to-face interviews or via digital platforms such as Google Forms.

Data Analysis

Data was analyzed using IBM SPSS 23.0. Variables related to the original scales were organized, and descriptive findings were presented in terms of frequencies, percentages, means, and standard deviations. Normal distribution suitability of continuous data was assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests. For comparisons between two independent groups, the T-test was applied for normally distributed continuous variables, while the Mann-Whitney U test was used for non-normally distributed variables. For comparisons among more than two independent groups, the Kruskal-Wallis H test was employed due to a lack of normal distribution, followed by the Mann-Whitney U test to identify specific group differences. Pearson correlation analysis was used to examine relationships between sub-dimensions of the scales. A statistical significance level of $p < 0.05$ was adopted.

Findings

This study aimed to determine the entrepreneurial characteristics and critical thinking tendencies of geography teachers. The findings are presented below.

Entrepreneurial Characteristics of Geography Teachers

The arithmetic mean (\bar{X}) and standard deviation (SD) values for the sub-dimensions and total scores of the entrepreneurship scale for geography teachers are provided in Table 2.

Table 2

Arithmetic Mean (\bar{X}) and Standard Deviation (SD) Values for Geography Teachers' Entrepreneurship Scale Scores

Entrepreneurship Dimensions	n	\bar{X}	SD
Risk-Taking	60	28.92	4.64
Opportunity Recognition	60	38.27	5.13
Self-Confidence	60	29.95	3.97
Emotional Intelligence	60	34.15	3.84
Innovativeness	60	26.58	5.16
Total Entrepreneurship	60	157.87	19.23

According to table 2, the overall mean score for entrepreneurship characteristics is (\bar{X} = 157.87). The highest mean score is observed in the "Opportunity Recognition" sub-dimension (\bar{X} = 38.27), while the lowest is in the "Innovativeness" sub-dimension (\bar{X} = 26.58). Mean scores for "Risk-Taking" (\bar{X} = 28.92), "Self-Confidence" (\bar{X} = 29.95), and "Emotional Intelligence" (\bar{X} = 34.15) were also recorded.

Critical Thinking Tendencies of Geography Teachers

The arithmetic mean (\bar{X}) and standard deviation (SD) values for the sub-dimensions and total scores of the critical thinking scale are presented in Table 3.

Table 3

Arithmetic Mean (\bar{X}) and Standard Deviation (SD) Values for Geography Teachers' Critical Thinking Scale Scores

Critical Thinking Level	n	%	\bar{X}	SD
Low	5	8,3	231,80	6,016
Moderate	44	73,3	273,52	18,54
High	11	18,3	308,81	9,06
Total	60	100,0	276,51	25,25

The mean critical thinking scale score is \bar{X} = 276.52. Among participants, 8.3% exhibited low critical thinking tendencies, 73.3% exhibited moderate tendencies, and 18.3% exhibited high tendencies.

Gender-Based Differences in Entrepreneurial Characteristics

Mann-Whitney U and T-test results were analyzed to determine whether geography teachers' entrepreneurship scores showed statistically significant differences based on gender (Table 4). It was found that all sub-dimension scores of the entrepreneurship scale did not show any statistically significant differences based on gender ($p > 0.05$). This finding indicates that there is no statistically significant relationship between gender and entrepreneurship scale scores.

Male geography teachers had higher mean scores in the "Risk-Taking" sub-dimension (\bar{X} = 29.15) compared to female teachers (\bar{X} = 28.50), but this difference was not statistically significant. Similarly, female geography teachers had higher mean scores in the "Opportunity Recognition" sub-dimension (\bar{X} = 38.40) compared to male teachers (\bar{X} = 38.18), but this

difference was also not statistically significant. Female geography teachers had higher mean scores in the “Self-Confidence” sub-dimension (\bar{X} = 30.77) compared to male teachers (\bar{X} = 29.47), but the difference was not statistically significant. In the “Emotional Intelligence” sub-dimension, female geography teachers had higher mean scores (\bar{X} = 34.77) than male teachers (\bar{X} = 33.78), but this difference was not statistically significant. Male geography teachers scored higher in the “Innovativeness” sub-dimension (\bar{X} = 27.05) compared to female teachers (\bar{X} = 25.77), but this difference was also not statistically significant.

Table 4
Mann-Whitney U and T-Test Results for Sub-Dimension Scores of the Entrepreneurship Scale Based on Gender

Entrepreneurship Dimensions	Seniority	n	\bar{X}	SD	χ^2	p	Difference
Risk Taking	0-3 years ¹	3	25,66	4,61880	8,839	,065	-
	4-7 years ²	19	30,00	3,57460			
	8-12 years ³	18	30,33	5,04101			
	13-20 years ⁴	15	26,33	4,95215			
	21 years and over ⁵	5	29,40	2,88097			
Seeing Opportunities	0-3 years ¹	3	34,00	3,46410	19,273	,001	2>1
	4-7 years ²	19	40,47	2,79620			2>4
	8-12 years ³	18	40,55	4,85341			2>5
	13-20 years ⁴	15	34,13	5,74290			3>4
	21 years and over ⁵	5	36,60	1,67332			
Self Confidence	0-3 years ¹	3	22,00	1,73205	13,618	,009	2>1
	4-7 years ²	19	31,26	2,70477			2>4
	8-12 years ³	18	31,22	2,83996			3>1
	13-20 years ⁴	15	28,06	4,78788			3>4
	21 years and over ⁵	5	30,80	2,48998			5>1
Emotional Intelligence	0-3 years ¹	3	27,66	2,88675	19,252	,001	2>1
	4-7 years ²	19	33,31	2,74980			3>1
	8-12 years ³	18	36,72	2,98635			3>2
	13-20 years ⁴	15	33,06	4,02611			3>4
	21 years and over ⁵	5	35,20	3,76829			4>1
							5>1

Being Innovative	0-3 years ¹	3	22,00	,00000	5,199	,267	-
	4-7 years ²	19	27,05	4,20943			
	8-12 years ³	18	28,16	5,44761			
	13-20 years ⁴	15	25,33	5,38074			
	21 years and over ⁵	5	25,60	7,12741			

Table 5

Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Entrepreneurship Scale Based on Seniority

Entrepreneurship Dimensions	Gender	n	\bar{X}	SD	U/t	p
Risk-Taking	Male	38	29,15	4,576	,526	,601 ^b
	Female	22	28,50	4,837		
Opportunity Recognition	Male	38	38,18	5,506	408,500	,884 ^a
	Female	22	38,40	4,510		
Self-Confidence	Male	38	29,47	4,360	365,500	,418 ^a
	Female	22	30,77	3,100		
Emotional Intelligence	Male	38	33,78	3,919	382,000	,578 ^a
	Female	22	34,77	3,702		
Innovativeness	Male	38	27,05	5,342	,924	,359 ^b
	Female	22	25,77	4,849		

Seniority-Based Differences in Entrepreneurial Characteristics

Kruskal-Wallis H test results were analyzed to determine whether geography teachers' entrepreneurship scores showed statistically significant differences based on seniority. Statistically significant differences were found in the "Opportunity Recognition" ($p = 0.001$), "Self-Confidence" ($p = 0.009$), and "Emotional Intelligence" ($p = 0.001$) sub-dimensions. However, no significant differences were observed in the "Risk-Taking" and "Innovativeness" sub-dimensions. Mann-Whitney U test results were used to identify specific group differences (Table 5).

According to Table 5, in the "Opportunity Recognition" sub-dimension, the mean score for the 4-7 years group ($\bar{X} = 40.47$) was higher than that of the 0-3 years group ($\bar{X} = 34.00$), 13-20 years group ($\bar{X} = 34.13$), and 21+ years group ($x = 36.60$). Additionally, the mean score for the 8-12 years group ($\bar{X} = 40.56$) was higher than that of the 13-20 years group ($\bar{X} = 34.13$).

In the "Self-Confidence" sub-dimension, the mean score for the 4-7 years group ($\bar{X} = 31.26$) was higher than that of the 0-3 years group ($\bar{X} = 22.00$) and the 13-20 years group ($\bar{X} = 28.06$). Similarly, the mean score for the 8-12 years group ($\bar{X} = 31.22$) was higher than that of the 0-3 years group ($\bar{X} = 22.00$) and the 13-20 years group ($\bar{X} = 28.06$). Additionally, the mean score for the 21+ years group ($\bar{X} = 30.08$) was higher than that of the 0-3 years group ($\bar{X} = 22.00$).

In the “Emotional Intelligence” sub-dimension, the mean score for the 4-7 years group (\bar{X} = 33.31) was higher than that of the 0-3 years group (\bar{X} = 27.66). The mean score for the 8-12 years group (\bar{X} = 36.72) was higher than that of the 0-3 years group (\bar{X} = 27.66), the 4-7 years group (\bar{X} = 33.31), and the 13-20 years group (\bar{X} = 33.06). The mean score for the 13-20 years group (\bar{X} = 33.06) was higher than that of the 0-3 years group (\bar{X} = 27.66). Additionally, the mean score for the 21+ years group (\bar{X} = 35.20) was higher than that of the 0-3 years group (\bar{X} = 27.66).

For the “Risk-Taking” and “Innovativeness” sub-dimensions, no statistically significant differences were found.

Age-Based Differences in Entrepreneurial Characteristics of Geography Teachers

The Kruskal-Wallis H Test was applied to determine whether geography teachers’ responses to the entrepreneurship scale showed statistically significant differences based on age (Table 6).

Table 6
Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Entrepreneurship Scale Based on Age

Entrepreneurship Dimensions	Age	n	\bar{X}	SD	χ^2	p	Difference
Risk Taking	24-33 Age ¹	31	30,03	3,69219	5,796	,055	-
	34-43 Age ²	23	28,47	5,30754			
	44-54 Age ³	6	24,83	4,49073			
Seeing Opportunities	24-33 Age ¹	31	39,77	3,44199	5,932	,052	-
	34-43 Age ²	23	36,86	6,85104			
	44-54 Age ³	6	35,83	1,47196			
Self Confidence	24-33 Age ¹	31	30,29	3,57951	2,265	,322	-
	34-43 Age ²	23	30,26	3,71994			
	44-54 Age ³	6	27,00	6,03324			
Emotional Intelligence	24-33 Age ¹	31	33,41	3,37416	2,009	,366	-
	34-43 Age ²	23	35,34	4,09666			
	44-54 Age ³	6	33,33	4,58984			
Being Innovative	24-33 Age ¹	31	26,93	4,16282	5,149	,076	-
	34-43 Age ²	23	27,39	5,34057			
	44-54 Age ³	6	21,66	7,22957			

According to the data in table 6, the scores of geography teachers on all sub-dimensions of the entrepreneurship scale did not show any statistically significant differences based on the age variable ($p > 0.05$). This finding indicates that there is no statistically significant relationship between the entrepreneurship scale and the age variable. Accordingly, the mean scores of the “Risk-Taking” sub-dimension for geography teachers aged 24-33 (\bar{X} = 30.03) were higher than those of geography teachers aged 44-54 (\bar{X} = 24.83), but the difference was not statistically significant. Similarly, the mean scores of the “Opportunity Recognition” sub-dimension for geography teachers aged 24-33 (\bar{X} = 39.77) were higher than those of geography teachers aged 44-54 (\bar{X} = 35.83), but this difference was not statistically significant. The mean scores of the “Self-Confidence” sub-dimension for geography teachers aged 24-33 (\bar{X} = 30.29) were higher than those of geography teachers aged 44-54 (\bar{X} = 27.00), but the difference was not significant. The mean scores of the “Emotional Intelligence” sub-dimension for geography teachers aged 34-43 (\bar{X} = 35.34) were higher than those of geography teachers aged 44-54

(\bar{X} =33.33), but the difference was not significant. Similarly, the mean scores of the “Innovativeness” sub-dimension for geography teachers aged 34-43 (\bar{X} =27.39) were higher than those of geography teachers aged 44-54 (\bar{X} =21.66), but the difference was not statistically significant.

Task-Based Differences in Entrepreneurial Characteristics of Geography Teachers

Mann-Whitney U Test results were analyzed to determine whether the responses of geography teachers to the entrepreneurship scale showed statistically significant differences based on the task variable. The results indicated statistically significant differences in the sub-dimensions of “Risk-Taking” ($p=0.011$), “Opportunity Recognition” ($p=0.018$), “Emotional Intelligence” ($p=0.025$), and “Innovativeness” ($p=0.012$) based on the tasks of the teachers. Deputy principals had higher mean scores in the “Self-Confidence” sub-dimension (\bar{X} =33.75) compared to geography teachers (\bar{X} =29.67), but the difference was not statistically significant. In the “Risk-Taking,” “Opportunity Recognition,” “Emotional Intelligence,” and “Innovativeness” sub-dimensions, the mean scores of deputy principals were higher than those of geography teachers (Table 7).

Table 7

Mann-Whitney U Test Results for Sub-Dimension Scores of the Entrepreneurship Scale Based on Task Variable

Entrepreneurship Dimensions	Task-Based	n	\bar{X}	SD	U	p
Risk Taking	Teacher	56	28,51	4,49643	27,000	,011
	Deputy principals	4	34,50	3,00000		
Seeing Opportunities	Teacher	56	37,85	4,97422	32,500	,018
	Deputy principals	4	44,00	4,00000		
Self Confidence	Teacher	56	29,67	3,82863	47,000	,053
	Deputy principals	4	33,75	4,50000		
Emotional Intelligence	Teacher	56	33,80	3,62024	37,000	,025
	Deputy principals	4	39,00	4,00000		
Being Innovative	Teacher	56	26,07	4,84621	27,500	,012
	Deputy principals	4	33,75	4,50000		

Differences in Entrepreneurial Characteristics of Geography Teachers Based on Faculty of Graduation

The Mann-Whitney U Test results were analyzed to determine whether the responses of geography teachers to the entrepreneurship scale showed statistically significant differences based on the faculty from which they graduated. The results revealed that the scores of geography teachers on all sub-dimensions of the entrepreneurship scale did not show any statistically significant differences based on the faculty of graduation ($p > 0.05$). This finding can also be interpreted as the absence of a significant relationship between the entrepreneurship scale and the faculty of graduation variable (Table 8).

Table 8

Mann-Whitney U Test Results for Sub-Dimension Scores of the Entrepreneurship Scale Based on Faculty of Graduation

Entrepreneurship Dimensions	Faculty of Graduation	n	\bar{X}	SD	U/t	p
Risk Taking	Faculty of Education	35	28,80	4,82518	428,000	,886 ^a
	Faculty of Arts & Sci.	25	29,08	4,47139		
Seeing Opportunities	Faculty of Education	35	38,11	5,54538	437,000	,994 ^a
	Faculty of Arts & Sci.	25	38,4800	4,57457		
Self Confidence	Faculty of Education	35	30,1714	3,75332	,508	,613 ^b
	Faculty of Arts & Sci.	25	29,64	4,30968		
Emotional Intelligence	Faculty of Education	35	33,65	3,51420	368,000	,294 ^a
	Faculty of Arts & Sci.	25	34,84	4,22966		
Being Innovative	Faculty of Education	35	26,77	4,70348	,331	,742 ^b
	Faculty of Arts & Sci.	25	26,32	5,83609		

According to the data in table 8, the mean scores of the “Risk-Taking” sub-dimension of the entrepreneurship scale for geography teachers who graduated from faculties of arts and sciences (\bar{X} =29.08) were higher than those for geography teachers who graduated from faculties of education (\bar{X} =28.80), but this difference was not statistically significant. Similarly, the mean scores of the “Opportunity Recognition” sub-dimension for geography teachers who graduated from faculties of arts and sciences (\bar{X} =38.48) were higher than those for geography teachers who graduated from faculties of education (\bar{X} =38.11), but this difference was also not statistically significant. The mean scores of the “Self-Confidence” sub-dimension for geography teachers who graduated from faculties of education (\bar{X} =30.17) were higher than those for geography teachers who graduated from faculties of arts and sciences (\bar{X} =29.64), but the difference was not significant. In the “Emotional Intelligence” sub-dimension, geography teachers who graduated from faculties of arts and sciences (\bar{X} =34.84) had higher mean scores than those who graduated from faculties of education (\bar{X} =33.65), but this difference was not statistically significant. Finally, in the “Innovativeness” sub-dimension, the mean scores for geography teachers who graduated from faculties of education (\bar{X} =26.77) were higher than those for geography teachers who graduated from faculties of arts and sciences (\bar{X} =26.32), but this difference was also not statistically significant.

Differences in Entrepreneurial Characteristics of Geography Teachers Based on Educational Level

The Mann-Whitney U Test results were analyzed to determine whether the responses of geography teachers to the entrepreneurship scale showed statistically significant differences based on educational level. The results revealed that the scores of geography teachers on all sub-dimensions of the entrepreneurship scale did not show any statistically significant differences based on educational level ($p > 0.05$) (Table 9).

Table 9

Mann-Whitney U Test Results for Sub-Dimension Scores of the Entrepreneurship Scale Based on Educational Level

Entrepreneurship Dimensions	Educational Level	n	\bar{X}	SD	U/t	p
Risk Taking	Undergraduate	38	28,21	4,51519	332,500	,188 ^a
	Postgraduate education	22	30,13	4,71366		
Seeing Opportunities	Undergraduate	38	37,44	5,25921	308,000	,090 ^a
	Postgraduate education	22	39,68	4,66381		
Self Confidence	Undergraduate	38	29,57	3,97718	321,000	,135 ^a
	Postgraduate education	22	30,59	3,96003		
Emotional Intelligence	Undergraduate	38	34,07	3,78747	369,000	,449 ^a
	Postgraduate education	22	34,27	4,01404		
Being Innovative	Undergraduate	38	26,15	5,57274	-,837	,406 ^b
	Postgraduate education	22	27,31	4,39032		

From the findings in table 9, it can be concluded that there is no statistically significant difference between the entrepreneurship scale and the educational level variable. Accordingly, the mean scores of the “Risk-Taking” sub-dimension for geography teachers with postgraduate education (\bar{X} =30.13) were higher than those for geography teachers with undergraduate degrees (\bar{X} =28.21), but the difference was not statistically significant. Similarly, the mean scores of the “Opportunity Recognition” sub-dimension (\bar{X} =39.68) were higher for postgraduate teachers than for undergraduate teachers (\bar{X} =37.44), but this difference was also not statistically significant. The mean scores of the “Self-Confidence” sub-dimension (\bar{X} =30.59) were higher for postgraduate teachers compared to undergraduate teachers (\bar{X} =29.57), but the difference was not significant. For the “Emotional Intelligence” sub-dimension, the mean scores for postgraduate teachers (\bar{X} =34.27) were higher than those for undergraduate teachers (\bar{X} =34.07), but again, the difference was not significant. The mean scores of the “Innovativeness” sub-dimension (\bar{X} =27.31) were higher for postgraduate teachers compared to undergraduate teachers (\bar{X} =26.15), but this difference was not statistically significant.

Gender-Based Differences in Critical Thinking Tendencies of Geography Teachers

According to the Mann-Whitney U and T-test results, there was a statistically significant difference ($p=0.027$) in the “Systematicity” sub-dimension of the critical thinking scale based on gender. The mean score for female teachers in the “Systematicity” sub-dimension (\bar{X} =28.50) was higher than that for male teachers (\bar{X} =26.23) (Table 10).

Table 10

Mann-Whitney U Test Results for Sub-Dimension Scores of the Critical Thinking Scale Based on Gender

Critical Thinking Tendencies	Gender	n	\bar{X}	SD	U	p
Analyticity	Male	38	47,13	5,86870	374,000	,499
	Female	22	48,45	5,27101		
	Male	38	51,23	8,17853		

Open-Mindedness	Female	22	51,45	5,14298		
Inquisitiveness	Male	38	42,52	4,13121	401,500	,799
	Female	22	42,77	3,17628		
Self Confidence	Male	38	31,68	4,65052	358,500	,358
	Female	22	32,50	2,95603		
Truth-Seeking	Male	38	32,36	5,03190	327,500	,164
	Female	22	34,90	3,06919		
Systematicity	Male	38	26,23	4,09637	275,000	,027
	Female	22	28,50	3,58236		

According to the data in table 10, the mean scores of the “Analyticity” sub-dimension for female geography teachers ($\bar{X}=48.45$) were higher than those for male geography teachers ($\bar{X}=47.13$), but the difference was not statistically significant. Similarly, the mean scores of the “Open-Mindedness” sub-dimension ($\bar{X}=51.45$) were higher for female teachers compared to male teachers ($\bar{X}=51.23$), but the difference was not significant. The mean scores of the “Inquisitiveness” sub-dimension ($\bar{X}=42.77$) were higher for female teachers compared to male teachers ($\bar{X}=42.52$), but the difference was not significant. For the “Self-Confidence” sub-dimension, the mean scores for female teachers ($\bar{X}=32.50$) were higher than those for male teachers ($\bar{X}=31.68$), but this difference was not significant. Lastly, in the “Truth-Seeking” sub-dimension, the mean scores for female teachers ($\bar{X}=34.91$) were higher than those for male teachers ($\bar{X}=32.36$), but this difference was not statistically significant.

Seniority-Based Differences in Critical Thinking Tendencies of Geography Teachers

The Kruskal-Wallis H Test results were used to determine whether the responses of geography teachers to the critical thinking scale showed statistically significant differences based on seniority. Statistically significant differences were found in the sub-dimensions of “Analyticity” ($p=0.000$), “Open-Mindedness” ($p=0.018$), “Inquisitiveness” ($p=0.031$), “Self-Confidence” ($p=0.002$), “Truth-Seeking” ($p=0.02$), and “Systematicity” ($p=0.001$). Mann-Whitney U tests were conducted to determine which groups had differences (Table 11).

Table 11
Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Critical Thinking Scale Based on Seniority

Critical Thinking Tendencies	Seniority	n	\bar{X}	SD	χ^2	p	Difference
Analyticity	0-3 years ¹	3	44,00	5,196	26,208	,000	2>4
	4-7 years ²	19	48,68	5,667			3>1
	8-12 years ³	18	51,94	2,999			3>4
	13-20 years ⁴	15	42,53	4,172			3>5
	21 years and over ⁵	5	45,40	3,286			
Open Mindedness	0-3 years ¹	3	43,33	5,773	11,858	,018	2>1
	4-7 years ²	19	53,26	5,404			2>4
	8-12 years ³	18	53,83	7,382			3>1
	13-20 years ⁴	15	47,06	6,974			3>4
	21 years and over ⁵	5	52,40	6,655			
Inquisitiveness	0-3 years ¹	3	46,33	6,350	10,602	,031	2>4
	4-7 years ²	19	42,89	3,298			3>4
	8-12 years ³	18	44,16	2,749			

	13-20 years ⁴	15	40,06	3,390			
	21 years and over ⁵	5	41,40	4,669			
Self Confidence	0-3 years ¹	3	22,33	4,618	16,643	,002	2>1
	4-7 years ²	19	33,15	3,387			2>4
	8-12 years ³	18	33,66	2,700			3>1
	13-20 years ⁴	15	30,73	3,972			3>4
	21 years and over ⁵	5	31,00	1,870			3>5
							4>1
							5>1
Truth-Seeking	0-3 years ¹	3	26,66	6,350	17,140	,002	2>4
	4-7 years ²	19	34,63	3,303			3>1
	8-12 years ³	18	35,72	2,761			3>4
	13-20 years ⁴	15	29,53	4,657			5>4
	21 years and over ⁵	5	34,80	2,167			
Systematicity	0-3 years ¹	3	22,00	,000	19,328	,001	2>1
	4-7 years ²	19	26,42	3,656			3>1
	8-12 years ³	18	30,00	1,847			3>2
	13-20 years ⁴	15	25,06	4,620			3>4
	21 years and over ⁵	5	28,00	3,872			5>1

According to table 11, in the “Analyticity” sub-dimension, the mean scores for teachers in the 4-7 years group ($\bar{x}=48.68$) were higher than those for teachers in the 13-20 years group ($\bar{x}=42.53$). Similarly, the mean scores for teachers in the 8-12 years group ($\bar{x}=51.94$) were higher than those for teachers in the 0-3 years group ($\bar{x}=44.00$), 13-20 years group ($\bar{x}=42.53$), and 21+ years group ($\bar{x}=45.40$).

In the “Open-Mindedness” sub-dimension, the mean scores for teachers in the 4-7 years group ($\bar{x}=53.26$) were higher than those for teachers in the 0-3 years group ($\bar{x}=43.33$) and the 13-20 years group ($\bar{x}=47.06$). Additionally, the mean scores for teachers in the 8-12 years group ($\bar{x}=53.83$) were higher than those for teachers in the 0-3 years group ($\bar{x}=43.33$) and the 13-20 years group ($\bar{x}=47.06$).

In the “Inquisitiveness” sub-dimension, the mean scores for teachers in the 4-7 years group ($\bar{x}=42.89$) were higher than those for teachers in the 13-20 years group ($\bar{x}=40.06$). The mean scores for teachers in the 8-12 years group ($\bar{x}=44.16$) were also higher than those for teachers in the 13-20 years group ($\bar{x}=40.06$).

In the “Self-Confidence” sub-dimension, the mean scores for teachers in the 4-7 years group ($\bar{x}=33.15$) were higher than those for teachers in the 0-3 years group ($\bar{x}=22.33$) and the 13-20 years group ($\bar{x}=30.73$). Similarly, the mean scores for teachers in the 8-12 years group ($\bar{x}=33.66$) were higher than those for teachers in the 0-3 years group ($\bar{x}=22.33$), the 13-20 years group ($\bar{x}=30.73$), and the 21+ years group ($\bar{x}=31.00$). Furthermore, the mean scores for teachers in the 13-20 years group ($\bar{x}=30.73$) and the 21+ years group ($\bar{x}=31.00$) were higher than those for teachers in the 0-3 years group ($\bar{x}=22.33$).

In the “Truth-Seeking” sub-dimension, the mean scores for teachers in the 4-7 years group ($\bar{x}=34.63$) were higher than those for teachers in the 13-20 years group ($\bar{x}=29.53$). The

mean scores for teachers in the 8-12 years group (\bar{X} =35.72) were higher than those for teachers in the 0-3 years group (\bar{X} =26.66) and the 13-20 years group (\bar{X} =29.53). Additionally, the mean scores for teachers in the 21+ years group (\bar{X} =34.80) were higher than those for teachers in the 13-20 years group (\bar{X} =29.53).

In the “Systematicity” sub-dimension, the mean scores for teachers in the 4-7 years group (\bar{X} =26.42) were higher than those for teachers in the 0-3 years group (\bar{X} =22.00). Similarly, the mean scores for teachers in the 8-12 years group (\bar{X} =30.00) were higher than those for teachers in the 0-3 years group (\bar{X} =22.00), the 4-7 years group (\bar{X} =26.42), and the 13-20 years group (\bar{X} =25.06). Finally, the mean scores for teachers in the 21+ years group (\bar{X} =28.00) were higher than those for teachers in the 0-3 years group (\bar{X} =22.00).

Age-Based Differences in Critical Thinking Tendencies of Geography Teachers

The Kruskal-Wallis H Test results for the critical thinking scale responses of geography teachers based on age are presented in Table 12.

Table 12
Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Critical Thinking Scale Based on Age

Critical Thinking Tendencies	Age	n	\bar{X}	SD	χ^2	p	Difference
Analyticity	24-33 Age ¹	31	49,19	5,88455	5,773	,056	-
	34-43 Age ²	23	46,26	4,99288			
	44-54 Age ³	6	44,66	4,96655			
Open-Mindedness	24-33 Age ¹	31	53,03	7,54756	3,590	,166	-
	34-43 Age ²	23	49,26	6,75693			
	44-54 Age ³	6	50,33	4,96655			
Inquisitiveness	24-33 Age ¹	31	43,77	3,99758	6,553	,038	1>2
	34-43 Age ²	23	41,47	3,07290			
	44-54 Age ³	6	41,00	3,74166			
Self Confidence	24-33 Age ¹	31	32,64	4,83424	6,474	,039	1>3
	34-43 Age ²	23	31,78	3,13277			
	44-54 Age ³	6	29,33	1,96638			
Truth-Seeking	24-33 Age ¹	31	34,64	4,38595	6,708	,035	1>2
	34-43 Age ²	23	31,60	4,59979			
	44-54 Age ³	6	32,83	3,43026			
Systematicity	24-33 Age ¹	31	26,96	3,93687	,183	,912	-
	34-43 Age ²	23	27,34	4,11879			
	44-54 Age ³	6	26,50	4,88876			

According to table 12, statistically significant differences were found in the critical thinking sub-dimensions of “Inquisitiveness” (p=0.038), “Self-Confidence” (p=0.039), and “Truth-Seeking” (p=0.035). Mann-Whitney U tests were applied to identify which groups differed. In the “Inquisitiveness” sub-dimension, the mean scores of teachers aged 24-33 (\bar{X} =43.77) were higher than those of teachers aged 34-43 (\bar{X} =41.47). In the “Self-Confidence” sub-dimension, the mean scores of teachers aged 24-33 (\bar{X} =32.64) were higher than those of teachers aged 44-54 (\bar{X} =29.33). In the “Truth-Seeking” sub-dimension, the mean scores of teachers aged 24-33 (\bar{X} =34.64) were higher than those of teachers aged 34-43 (\bar{X} =31.60).

Additionally, the mean scores of the “Analyticity” sub-dimension for geography teachers aged 24-33 (\bar{X} =49.19) were higher than those for teachers aged 44-54 (\bar{X} =44.66), but the difference was not statistically significant. Similarly, in the “Open-Mindedness” sub-dimension, the mean scores of teachers aged 24-33 (\bar{X} =53.03) were higher than those for

teachers aged 34-43 (\bar{X} =49.26), but the difference was not significant. In the “Systematicity” sub-dimension, the mean scores of teachers aged 34-43 (\bar{X} =27.34) were higher than those for teachers aged 44-54 (\bar{X} =26.50), but the difference was not statistically significant.

Differences in Critical Thinking Tendencies of Geography Teachers Based on Task Variable

The Kruskal-Wallis H Test results were analyzed to determine whether the responses of geography teachers to the critical thinking scale showed statistically significant differences based on the task variable. The findings revealed that none of the critical thinking sub-dimensions showed statistically significant differences based on the teachers' tasks ($p > 0.05$). This indicates that there is no statistically significant relationship between the critical thinking scale and the task variable (Table 13).

Table 13

Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Critical Thinking Scale Based on Task Variable

Critical Thinking Tendencies	Task-Based	n	\bar{X}	SD	U	p
Analyticity	Teacher	56	47,60	5,64939	103,500	,801
	Deputy principals	4	47,75	6,50000		
Open-Mindedness	Teacher	56	51,19	7,39390	98,000	,677
	Deputy principals	4	53,00	2,00000		
Inquisitiveness	Teacher	56	42,48	3,87529	76,500	,290
	Deputy principals	4	44,50	1,00000		
Self Confidence	Teacher	56	31,85	4,20575	74,000	,257
	Deputy principals	4	33,75	1,50000		
Truth-Seeking	Teacher	56	33,07	4,62742	56,500	,099
	Deputy principals	4	36,50	1,00000		
Systematicity	Teacher	56	27,03	4,17335	100,000	,720
	Deputy principals	4	27,50	1,00000		

According to the data in table 13, the mean scores of the “Analyticity” sub-dimension for deputy principals (\bar{X} =47.75) were higher than those for geography teachers (\bar{X} =47.60), but the difference was not statistically significant. Similarly, in the “Open-Mindedness” sub-dimension, the mean scores for deputy principals (\bar{X} =53.00) were higher than those for geography teachers (\bar{X} =51.19), but the difference was not significant. In the “Inquisitiveness” sub-dimension, the mean scores for deputy principals (\bar{X} =44.50) were higher than those for geography teachers (\bar{X} =42.48), but the difference was not significant. For the “Self-Confidence” sub-dimension, the mean scores for deputy principals (\bar{X} =33.75) were higher than those for geography teachers (\bar{X} =31.85), but the difference was not significant. In the “Truth-Seeking” sub-dimension, the mean scores for deputy principals (\bar{X} =36.50) were higher than those for geography teachers (\bar{X} =33.07), but the difference was not statistically significant. Finally, in the “Systematicity” sub-dimension, the mean scores for deputy principals (\bar{X} =27.50) were higher than those for geography teachers (\bar{X} =27.03), but the difference was not statistically significant.

Differences in Critical Thinking Tendencies of Geography Teachers Based on Faculty of Graduation

The Kruskal-Wallis H Test results were analyzed to determine whether the responses of geography teachers to the critical thinking scale showed statistically significant differences based on the faculty from which they graduated. The findings revealed that none of the critical thinking sub-dimensions showed statistically significant differences based on the faculty of graduation ($p > 0.05$). This indicates that there is no significant relationship between the critical thinking scale and the faculty of graduation variable (Table 14).

Table 14

Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Critical Thinking Scale Based on Faculty of Graduation

Critical Thinking Tendencies	Faculty of Graduation	n	\bar{X}	SD	U/t	p
Analyticity	Faculties of education	35	48,00	5,17914	,619	,538 ^b
	Faculty of Arts & Sci.	25	47,08	6,31744		
Open-Mindedness	Faculties of education	35	51,11	6,65437	424,000	,839 ^a
	Faculty of Arts & Sci.	25	51,60	7,96346		
Inquisitiveness	Faculties of education	35	42,82	3,80004	,510	,612 ^b
	Faculty of Arts & Sci.	25	42,32	3,81576		
Self Confidence	Faculties of education	35	32,62	3,90389	334,500	,120 ^a
	Faculty of Arts & Sci.	25	31,08	4,28097		
Truth-Seeking	Faculties of education	35	33,00	4,91097	419,000	,781 ^a
	Faculty of Arts & Sci.	25	33,72	4,06735		
Systematicity	Faculties of education	35	26,97	3,98885	424,500	,844 ^a
	Faculty of Arts & Sci.	25	27,20	4,18330		

According to the information in table 14, the mean scores of the “Analyticity” sub-dimension of the critical thinking scale for geography teachers who graduated from faculties of education ($\bar{X}=48.00$) were higher than those for geography teachers who graduated from faculties of arts and sciences ($\bar{X}=47.08$), but this difference was not statistically significant. The mean scores of the “Open-Mindedness” sub-dimension for geography teachers who graduated from faculties of arts and sciences ($\bar{X}=51.60$) were higher than those for geography teachers who graduated from faculties of education ($\bar{X}=51.11$), but the difference was not significant. Similarly, the mean scores of the “Inquisitiveness” sub-dimension for geography teachers who graduated from faculties of education ($\bar{X}=42.82$) were higher than those for geography teachers who graduated from faculties of arts and sciences ($\bar{X}=42.32$), but the difference was not significant. The mean scores of the “Self-Confidence” sub-dimension for geography teachers who graduated from faculties of education ($\bar{X}=32.62$) were higher than those for geography teachers who graduated from faculties of arts and sciences ($\bar{X}=31.08$), but

this difference was not statistically significant. For the “Truth-Seeking” sub-dimension, the mean scores for geography teachers who graduated from faculties of arts and sciences ($\bar{X}=33.72$) were higher than those for geography teachers who graduated from faculties of education ($\bar{X}=33.00$), but the difference was not significant. Finally, in the “Systematicity” sub-dimension, the mean scores for geography teachers who graduated from faculties of arts and sciences ($\bar{X}=27.20$) were higher than those for geography teachers who graduated from faculties of education ($\bar{X}=26.97$), but the difference was not significant.

Differences in Critical Thinking Tendencies of Geography Teachers Based on Educational Level

According to the Kruskal-Wallis H Test results, statistically significant differences were found in the “Inquisitiveness” ($p=0.011$) and “Self-Confidence” ($p=0.002$) sub-dimensions of the critical thinking scale based on the educational level variable (Table 15).

Table 15

Kruskal-Wallis H Test Results for Sub-Dimension Scores of the Critical Thinking Scale Based on Educational Level

Critical Thinking Tendencies	Educational Level	n	\bar{X}	SD	U/t	p
Analyticity	Undergraduate	38	46,78	4,94378	327,000	,162 ^a
	Postgraduate education	22	49,04	6,57178		
Open-Mindedness	Undergraduate	38	50,15	6,33107	-1,671	,100 ^b
	Postgraduate education	22	53,31	8,19051		
Inquisitiveness	Undergraduate	38	41,63	3,63482	253,500	,011 ^a
	Postgraduate education	22	44,31	3,48311		
Self Confidence	Undergraduate	38	30,84	3,75986	212,500	,002 ^a
	Postgraduate education	22	33,95	3,99377		
Truth-Seeking	Undergraduate	38	33,00	4,24264	357,500	,352 ^a
	Postgraduate education	22	33,81	5,11428		
Systematicity	Undergraduate	38	26,55	4,09150	346,500	,270 ^a
	Postgraduate education	22	27,95	3,87270		

From the data in table 15, it can be observed that in the “Inquisitiveness” sub-dimension, the mean scores of teachers with postgraduate education ($\bar{X}=44.31$) were higher than those for teachers with undergraduate education ($\bar{X}=41.63$). Similarly, in the “Self-Confidence” sub-dimension, the mean scores of teachers with postgraduate education ($\bar{X}=33.95$) were higher than those for teachers with undergraduate education ($\bar{X}=30.84$). The mean scores of the “Analyticity” sub-dimension for geography teachers with postgraduate education ($\bar{X}=49.04$) were higher than those for geography teachers with undergraduate education ($\bar{X}=46.78$), but the difference was not statistically significant. For the “Open-Mindedness” sub-dimension, the mean scores for teachers with postgraduate education ($\bar{X}=53.31$) were higher than those for teachers with undergraduate education ($\bar{X}=50.15$), but the difference was not significant. Similarly, in the “Truth-Seeking” sub-dimension, the mean scores for teachers with postgraduate education ($\bar{X}=33.81$) were higher than those for teachers with undergraduate education ($\bar{X}=33.00$), but the difference was not statistically significant.

Finally, in the “Systematicity” sub-dimension, the mean scores for teachers with postgraduate education (\bar{X} =27.95) were higher than those for teachers with undergraduate education (\bar{X} =26.55), but this difference was not significant.

Correlation Between Entrepreneurial Characteristics and Critical Thinking Tendencies of Geography Teachers

The fourth sub-objective of the study was stated as, “Is there a statistically significant relationship between the entrepreneurial characteristics and critical thinking tendencies of geography teachers?” To determine the relationship, the results of the Spearman’s Rank Correlation were analyzed (Table 16).

Table 16
Spearman’s Rank Correlation Results for the Relationship Between Entrepreneurial Characteristics and Critical Thinking Tendencies of Geography Teachers

Variables	1	2	3	4	5	6	7	8	9	10	11
1.Analyticity	1										
2.Open-Mindedness	,517**	1									
3.Inquisitiveness	,378**	,299*	1								
4.Self Confidence E.D.	,471**	,653**	,387**	1							
5.Truth-Seeking	,677**	,606**	,409**	,544**	1						
6.Systematicity	,673**	,588**	,350**	,604**	,634**	1					
7.Risk Taking	,351**	,620**	,358**	,526**	,511**	,355**	1				
8.Seeing Opportunities	,484**	,669**	,292*	,507**	,631**	,437**	,766**	1			
9.Self Confidence G.	,472**	,470**	,220	,602**	,555**	,456**	,728**	,694**	1		
10.Emotional Intelligence	,422*	,284*	,006	,421**	,444*	,477*	,497*	,572**	,706**	1	
11.Being Innovative	,211	,223	,125	,293*	,297*	,196	,673**	,532**	,682**	,589**	1

According to the findings in table 16, significant positive correlations were observed among all sub-dimensions of critical thinking and among all sub-dimensions of entrepreneurship. However, significant correlations were not found between the “Analyticity” sub-dimension of critical thinking and the “Innovativeness” sub-dimension of entrepreneurship, the “Open-Mindedness” sub-dimension of critical thinking and the “Innovativeness” sub-dimension of entrepreneurship, the “Inquisitiveness” sub-dimension of critical thinking and the “Self-Confidence,” “Emotional Intelligence,” and “Innovativeness” sub-dimensions of entrepreneurship, and the “Systematicity” sub-dimension of critical thinking and the “Innovativeness” sub-dimension of entrepreneurship. Except for these, positive significant relationships ($p < 0.05$) were observed between the sub-dimensions of critical thinking and entrepreneurship.

Conclusion and Discussion

This study aimed to determine the entrepreneurial characteristics and critical thinking tendencies of geography teachers. The results regarding whether the entrepreneurial characteristics and critical thinking tendencies of geography teachers differed based on gender, seniority, educational level, age, job position, and faculty graduated from were examined. Based on the evaluation of the findings, the following key results were obtained:

In this study, the average total score of geography teachers on the entrepreneurship scale was found to be $\bar{X}=157.8667$. This result indicates that the entrepreneurship levels of geography teachers are at a good level. The good level refers to the extent to which geography teachers possess entrepreneurial skills. The results suggest that geography teachers may have misconceptions about entrepreneurship.

The study found that the entrepreneurship scores of administrators and teachers with postgraduate education were higher. This suggests that geography teachers might associate entrepreneurship with being an administrator or having a postgraduate education. This interpretation necessitates evaluating studies in literature within this framework. For instance, Polat and Aktop (2010) concluded that teachers' perceptions of entrepreneurship were at a high level. Similarly, Çelik (2014) found in a study on students that the entrepreneurship skills of social studies and classroom teacher candidates were at a good level. Other studies, such as Yavaşoğlu (2019), Armut (2018), and Artık (2019), concluded that science teacher candidates, social studies teacher candidates, and school administrators, respectively, exhibited high levels of entrepreneurial characteristics. Conversely, Özbilen and Okey (2017) concluded that teachers' entrepreneurship levels were low, while Özbay (2016) found that students in social sciences education displayed low levels of entrepreneurial characteristics.

The study found no statistically significant differences in the scores of all sub-dimensions of the entrepreneurship scale based on gender. This result implies that there is no statistically significant difference between the entrepreneurship scale and gender. Similar studies by Çelik (2014), Yılmaz and Sünbül (2009), Pan and Akay (2015) on university students, and Akyürek (2013) on primary school teachers also found no significant differences in entrepreneurship levels based on gender. However, Yazıcı (2014) found a significant difference favoring men in a study on middle school administrators but did not provide an explanation for this difference.

Statistically significant differences were found in the dimensions of opportunity recognition, self-confidence, and emotional intelligence. Geography teachers with 4-7 years and 8-12 years of seniority significantly differed from those with 0-3, 13-20, and over 21 years of seniority. This suggests that teachers in the middle of their careers exhibit higher levels of entrepreneurial characteristics. In contrast, Akyürek's (2013) study on primary school teachers found no significant differences in entrepreneurship characteristics based on seniority.

No statistically significant differences were found in the scores of all sub-dimensions of the entrepreneurship scale based on age. This finding indicates that there is no statistically significant difference between the entrepreneurship scale and age. This implies that teachers of different age groups have similar entrepreneurial characteristics. However, Yazıcı's (2014)

study on middle school administrators found significant differences based on age. Specifically, significant differences were found favoring the 25-35 age group over the 46-55 and 56-and-over age groups. Similarly, Karataş's (2018) study on physical education and sports students found significant differences based on age.

The entrepreneurship characteristics of geography teachers were analyzed based on job position, considering sub-dimension and total scores. The study found statistically significant differences in the dimensions of risk-taking, opportunity recognition, emotional intelligence, and innovation based on job position. The entrepreneurship scores of assistant principals were higher than those of teachers. This suggests that assistant principals are more entrepreneurial than teachers, taking more risks and recognizing opportunities earlier.

No statistically significant differences were found in the scores of all sub-dimensions of the entrepreneurship scale based on the faculty graduated from. This finding suggests that there is no significant relationship between the entrepreneurship scale and the faculty graduated from.

Similarly, no statistically significant differences were found in the scores of all sub-dimensions of the entrepreneurship scale based on educational level. This indicates that there is no statistically significant difference between the entrepreneurship scale and educational level. However, Akyürek's (2013) study on primary school teachers found no significant differences based on educational level, whereas Yazıcı's (2014) study on middle school administrators highlighted those administrators with postgraduate degrees had higher entrepreneurship scores compared to other educational groups.

The average total score of geography teachers on the critical thinking scale was found to be $\bar{X}=276.5167$. This suggests that geography teachers have a moderate level of critical thinking tendencies. In the literature, Kızıldağ's (2011) study on primary school teachers found that their critical thinking characteristics were at a moderate level. Similarly, Kürüm (2002) found that teacher candidates had moderate levels of critical thinking power across sub-dimensions. Hazer's (2011) study on social studies teachers found that critical thinking tendencies were generally at a moderate level, with high levels in self-confidence and moderate levels in other sub-dimensions. Conversely, Polat's (2017) study on primary school teachers identified low levels of critical thinking tendencies, while Selçuk's (2013) study on Turkish teachers and Aşık's (2018) study on biology teachers also identified low levels of critical thinking.

The study found that only the systematicity sub-dimension of the critical thinking scale showed statistically significant differences based on gender, with female teachers scoring higher ($\bar{X}=28.50$) than male teachers ($\bar{X}=26.23$). This indicates that female teachers are more systematic thinkers than their male counterparts. In the literature, Polat (2017), Kızıldağ (2011), and Selçuk (2013) found no significant differences in critical thinking tendencies based on gender. However, Hazer (2011) found significant differences favoring female teachers in the truth-seeking sub-dimension, while Yıldırım (2005) identified significant differences favoring female teachers in critical thinking skills among Turkish language and literature teachers.

Statistically significant differences were found in the critical thinking sub-dimensions of analyticity, open-mindedness, inquisitiveness, self-confidence, truth-seeking, and systematicity. When examining all sub-dimensions, significant differences were observed in favor of teachers with 4–7 years and 8–12 years of professional experience compared to teachers with 0–3 years, 13–20 years, and 21 years or more of experience. This finding suggests that as geography teachers' professional tenure and experience increase, they may develop a more critical perspective on situations, events, shortcomings, and problems related to their profession. In the literature, while Polat (2017) found significant differences in the critical thinking tendencies of classroom teachers based on their tenure, Soğukpınar (2017), Selçuk (2013), and Yıldırım (2005) did not find any significant differences between tenure and critical thinking.

Significant differences were found in the critical thinking sub-dimensions of inquisitiveness, self-confidence, and truth-seeking. The analysis revealed that teachers aged 24–33 exhibited higher critical thinking tendencies than other age groups. Studies by Aşkar (2015) also reported significant differences based on age. Conversely, Selçuk (2013), in a study of Turkish teachers, found no significant differences in the mean scores of critical thinking tendencies based on age.

No statistically significant differences were found between the critical thinking scale and job roles among geography teachers.

No statistically significant differences were found in the critical thinking dimensions of geography teachers based on the type of faculty they graduated from. Hazer (2011) reported no significant differences in the critical thinking tendencies of social studies teachers based on faculty type, and Yıldırım (2005) also found no significant differences in the critical thinking skills of Turkish and Turkish literature teachers based on the type of faculty they graduated from.

Statistically significant differences were observed in the inquisitiveness and self-confidence dimensions of critical thinking based on teachers' educational levels. Teachers with graduate-level education demonstrated significantly higher critical thinking tendencies in these sub-dimensions compared to those with undergraduate education. Aşık (2018) found that biology teachers with graduate-level education displayed more positive general attitudes than those with only undergraduate education. Soğukpınar (2017) obtained similar results, and Yıldırım (2005) reported significant differences in favor of graduate-level teachers regarding critical thinking skills.

A correlation analysis conducted to determine the relationship between the sub-dimension and total scores of geography teachers' entrepreneurial characteristics and critical thinking skills revealed significant positive relationships among all sub-dimensions of critical thinking and among all sub-dimensions of entrepreneurship. Based on these findings, it can be concluded that geography teachers possess high entrepreneurial characteristics and, at the same time, demonstrate high levels of critical thinking.

Recommendations

Based on the findings of this study, which aimed to determine the entrepreneurial characteristics and critical thinking tendencies of geography teachers, the following recommendations can be made:

- This study was limited to secondary schools in the Başakşehir district. To identify more meaningful relationships between variables regarding the entrepreneurial characteristics and critical thinking levels of geography teachers, the sample size could be increased.
- Providing preliminary information about the concept of entrepreneurship to teachers before administering surveys could prevent potential misconceptions about the concept.
- The results revealed that teachers' entrepreneurship levels were determined to be at a good level. To further increase geography teachers' awareness of entrepreneurship, entrepreneurship courses could be offered as compulsory courses rather than electives at universities.
- The study found that teachers' critical thinking levels were at a moderate level. To enhance teachers' critical thinking skills, the courses they take during their university education could be enriched with activities related to critical thinking.
- In-service training, conferences, and seminars could be organized to provide teachers with training on entrepreneurial skills and critical thinking.
- To encourage teachers further in entrepreneurship, the Ministry of National Education could support and reward teachers through its central and provincial organizations. This would undoubtedly increase teachers' entrepreneurial tendencies.
- Since geography teachers with graduate-level education were found to have higher critical thinking levels, teachers could be encouraged to pursue graduate-level education.

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Conflict of Interest

There is no conflict of interest.

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Funding

No financial support was received from any institution or person while conducting the study.

Ethical Committee Decision

There is no ethics committee approval. The research was conducted within the framework of the Declaration of Helsinki. Participants were volunteers and all were informed and consented in advance.