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# Examining Entrepreneurship Characteristics and Reflective Thinking Levels of Pre -Service Teachers at Physical Education and Sports School

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## Abstract

This study examines the relationship between the pre-service teachers' entrepreneurship skills and their reflective thinking levels. The sample of the study is 240 pre-service teachers studying at Bartın University Physical Education and Sports Teaching Department. Semerci (2007), "Reflective Thinking Tendency Scale" and Yılmaz & Sünbül (2009), "Entrepreneurship Scale for University Students" are used as data collection instruments. The data collected for the research were analyzed using SPSS 22.0 program. Reflective thinking levels and entrepreneurship characteristics of the pre-service teachers are examined based on gender, grade, entrepreneurship course and work experience variables. As a result, It is seen that female pre-service teachers' more reflective than male pre-service teachers and the entrepreneurship characteristics of the pre-service teachers in the study are found as "high." Moreover, in the work experience variable, there is a significant difference between the groups. A correlation analysis, it was found that there was a positive and significant relationship between entrepreneurship and all reflective thinking sub-scales, too. Based on the study's findings, it is possible to say that pre-service teachers with high entrepreneurship characteristics have high reflective thinking levels.

**Keywords:** Pre-Service Teachers, Entrepreneurship, Reflective Thinking

## 1. Introduction

Today, entrepreneurship has gained prominence upon the transition from an industrial society to an information society. Therefore, it is required to support, encourage entrepreneurship in every aspect, and provide training for entrepreneurship in societies' economic and social development. When reflective thinking, which is among the high-level thinking skills, is defined as a cognitive examination to pioneer the production of new information and development of alternative ways, the characteristics and skills similar in many aspects emerge between reflective-thinking individuals and entrepreneurs individuals.

Lipman (2003) defines reflective thinking as the skill of being aware of your thoughts and actions and thinking about the causes and effects of practices. Furthermore, he stated reflective thinking as considering an individual his methods and point of view in certain subjects. According to Dewey (1933), reflective thinking includes dealing with a subject in mind and seriously evaluating the subject.

According to Semerci (1999), developing and changing conditions of the world requires thinking individuals who can firmly lay down their existence. However, thinking individuals, in other words, individuals who can use their cognitive skills, will be more successful and survive in the future. Thus he points out the importance of education by stating, "This becomes evident as an obligation today and in the future." He draws attention to the point that this can only be achievable by developing sophisticated skills and improving educators' quality. The reflection skills of the educator improved the education quality and the learning quality in transferring the acquired skills to students. Besides, it is considered that it is required for a teacher to make an effort to change and continuously develop through self-evaluation, to be open to new knowledge and ideas and to develop himself/herself and the institution in the development of a teacher's qualifications (MEB, OYGM, 2006:1).

Considering the definition of entrepreneurship, entrepreneurship is defined as a process creating value for an individual and society, responding to economic opportunities/creating economic opportunities, exhibited by individuals, causing differences in economic systems through the innovations that it brings (Daniel, Alice and Neil, 1995: 352). According to Lounsbury (1998:52), entrepreneurship is taking an opportunity by emphasizing inequalities, examining alternative production processes and providing their optimization.

The reflective thinking levels and the entrepreneurship skills of pre-service teachers are essential at this point. The relationship between the reflective thinking tendencies and the entrepreneurship characteristics of educators in both educational activities and the business world is a subject that is worth researching in every faculty and every department. The subject of this study is what reflective thinking is, how it can be used effectively and its relation to entrepreneurship.

Within this framework, the primary purpose of this research is determined as examining a relationship between the entrepreneurship characteristics and reflective thinking levels of pre-service teachers studying in Physical Education and Sports School. The sub-problems that are determined within the framework of this problem are as follows:

1. What are the reflective thinking levels of the Pre-Service Physical Education and Sports Teachers?
2. What are the entrepreneurship levels of the Pre-Service Physical Education and Sports Teachers?
3. Do the entrepreneurship levels of pre-service Physical Education and Sports School teachers differ based on the variable of gender, instruction of entrepreneurship lecture and grade?
4. Do the reflective thinking levels of pre-service Physical Education and Sports teachers differ based on the variable of gender and grade?
5. Is there a relationship between the entrepreneurship levels and reflective thinking levels of pre-service Physical Education and Sports teachers?

## **2. Method**

The model, population and study group of the research, data collection instruments, data collection and data analysis information are stated here.

### *2.1. The Research Model*

A correlational survey model was used in the research as the entrepreneurship characteristics and reflective thinking levels of the pre-service teachers studying at Bartın University Physical Education and Sports School

are evaluated. Survey models are research approaches aiming to describe a condition present in the past and is present now. In the correlational survey model, which is a type of survey model, the presence and/or degree of covariance between two or more variances are tried to be determined (Karasar, 2012).

## 2.2. Research Population and Sample

The population of this research is formed of a total of 240 students studying at the 1st, 2nd, 3rd, 4th grades of Bartın University Physical Education and Sports School, Department of Teaching of Physical Education and Sports (the Teaching Department is a department of formal education) in 2017-2018 education year fall semester. Sampling could not be done as the population was reached entirely. The frequency and percentage distributions of the characteristics of the pre-service teachers in the sampling are shown in Table 1.

Table 1: The Frequency and Percentage Distributions of the Characteristics of the Pre-Service Physical Education and Sports Teachers Participating in the Research

Characteristics	f	%	
<b>Gender</b>	Male	140	58,3
	Female	100	41,7
<b>Grade</b>	1.	60	25
	2.	60	25
	3.	60	25
	4.	60	25
	18-20	98	40,3
<b>Age</b>	21-23	111	46,8
	24-26	24	10,0
	26+	7	2,9
	Yes	58	24,2
<b>Entrepreneurship Lecture</b>	No	182	75,8
	I haven't worked before	58	24,2
<b>Work Experience</b>	1-6 Months	80	33,3
	7-11 Months	19	7,9
	1-3 Years	34	14,2
	3 Years & More	49	20,4

As it is seen in Table 1, 58.3% of the pre-service Physical Education and Sports Teachers are male, and 41.7% are female. The classes have equal sizes. Considering the age variable, the majority of the pre-service teachers were between 21-23 years old with a ratio of 46.8%, and the least encountered were those aged 26 and older with a ratio of 2.9%. 24.2% of the pre-service teachers checked the status of taking Entrepreneurship Lecture as "Yes," while 75.8% checked it as "No." Considering these percentages, we can say that teaching of entrepreneurship lectures was not generalized. In terms of work experiences, 1-6 months had the highest percent with 33.3% percentage while 7-11 Months had the minor percent with 7.9% percentage. Furthermore, the percentage of those with no work experience and those with over 3 years of work experience is significant.

## 2.3. Data Collection Instruments

"Entrepreneurship Scale For University Students," which was developed by Yılmaz and Sünbül (2009), and "Reflective Thinking Tendency Scale" (YANDE), which was developed by Semerci (2007) was used for collecting research data. Furthermore, the "Personal Information Form" for determining gender, department, grade levels and similar variables of pre-service Physical Education and Sports teachers participating in the study is present as the 1st section.

**Reflective Thinking Level Scale (YANDE):** The scale is developed by Semerci (2007). It is formed of a total of 35 items and 5 points Likert type. The scale is formed of 7 sub-dimensions. Those are Constant and Oriented Thinking (7 items), Open-Mindedness (6 items), Interrogative and Effective Teaching (5 items), Teaching Responsibility and Scientificness (5 items), Researcher (6 items), Visionary and Sincere (4 items) and Viewing to Vocation (2 items). It is formed of 20 negative and 15 positive items. The negative items are adverse-coded. The validity and reliability study of the scale was performed by Semerci (2007). Accordingly, Cronbach Alpha values obtained in this study was calculated as 0.933 throughout the scale, it was calculated as 0.576 in Constant and Oriented Thinking sub dimension, it was calculated as 0.835 in Open-Mindedness sub dimension, it was calculated as 0.917 in Interrogative and Effective Teaching sub dimension, it was calculated as 0.745 in Teaching Responsibility and Scientificness sub dimension, it was calculated as 0.801 in Researcher sub dimension, it was calculated as 0.813 (4 items) in Being Visionary and Sincere, and it was calculated as 0.732 in Viewing to Vocation. According to Seçer (2015:219), Cronbach Alpha is a reliability method examined in the scale development and adaptation studies. Depending on the Alpha number, the  $\alpha$  value of the scale reliability should be minimum  $\alpha=0.70$  and over. Cronbach Alpha value in this research shows a high degree of reliability.

**University Students' Entrepreneurship Scale:** The scale is developed by Sünbül and Yılmaz (2009). It is formed of 36 items and the expressions which are transformed to Likert type are arranged as 5 point interval scale form ranging from "Very frequent" (5) to "Never" (1). It is seen that all of the items were gathered under one dimension through Basic Components Analysis. No negative items exist. Cronbach Alpha reliability value was found as  $\alpha=0.930$  in this study.

#### 2.4. Collection of Data

A utilization permit was obtained for the scales before collecting data concerning the research. The data was filled voluntarily by the pre-service Physical Education and Sports teachers studying in Bartın University Physical Education and Sports School, included in the sampling in the 2017-2018 fall semester.

#### 2.5. Data Analysis

The data, which was obtained for research, was analyzed using SPSS 22.0 program. Techniques such as frequency, percentage, arithmetic average and standard deviation in the data analysis as fit for the research. The significance level of (0.05) was taken as the basis in the significance tests. The arithmetic mean (X), standard deviation (SD), percentage (%), T-test (Independent Samples T-Test) for the samples that are unrelated to the parametric tests, single factor variant analysis (One Way ANOVA) tests were used for the unrelated samples. Tukey and Scheffe tests were preferred in the variant analyses, including significant differences. Furthermore, the Pearson Correlation Test was used to determine whether there is a linear relationship between two numerical measurements and the direction and severity of this relation if available.

### 3. Findings

The findings that were obtained from the research are presented as tables within the scope of sub-problems in this section.

#### 3.1. Findings Related to the First Sub-Problem

The first sub-problem of the research is for determining the reflective thinking levels of pre-service Physical Education and Sports Teachers. The findings of the first sub-problem are shown in Table 2.

Table 2: The Mean and Standard Deviation Values of The Reflective Thinking Levels of Pre-Service Teachers of Physical Education and Sports

Sub-dimensions	N	$\bar{X}$	SD
Constant and Oriented Thinking	240	4,00	0,51
Open-mindedness	240	4,47	0,65
Interrogative and Effective Teaching	240	4,71	0,58
Teaching Responsibility and Scientificness	240	4,28	0,67
Researcher	240	4,11	0,75
Being Visionary and Sincere	240	4,19	0,81
Viewing to Vocation	240	4,42	0,93

It is seen in Table 2 that the highest arithmetic mean resulted in “Interrogative and Effective Teaching” ( $\bar{x}=4,71$ ) sub dimension, the lowest arithmetic mean resulted in “Constant and Oriented Thinking” ( $\bar{x}=4,00$ ) sub dimension. Again considering the arithmetic mean values that emerged, it is seen that the views in the sub dimensions of “Open mindedness” ( $\bar{x}=4,47$ ), “Teaching Responsibility and Scientificness” ( $\bar{x}=4,28$ ) and “Viewing to Vocation” ( $\bar{x}=4,42$ ) are at the level of “*strongly agree*.” It is seen that the vies are at the level of “*generally agree*” in “Being Visionary and Sincere” ( $\bar{x}=4,19$ ) and “Researcher” ( $\bar{x}=4,11$ ) sub dimensions.

### 3.2. Findings Related to the Second Sub-Problem

The second sub-problem of the research is for determining the entrepreneurship levels of pre-service Physical Education and Sports Teachers. The findings of the second sub-problem are shown in Table 3.

Table 3: The Arithmetic Mean and Standard Deviation Value of The Entrepreneurship Characteristics of Pre-Service Teachers of Physical Education and Sports

Characteristic	N	$\bar{X}$	SD
Entrepreneurship	240	4,20	0,415

It is seen upon examining the entrepreneurship characteristics of the pre-service teachers and viewing the emerging arithmetic mean value in Table 3 that the result obtained from the entrepreneurship means is 4.20. Furthermore, it shows that pre-service teachers replied at the “*High Entrepreneurship*” level. Based on this result, it can be expressed that the pre-service teachers are at a “*high entrepreneurship*” level.

### 3.3. Findings Related to the Third Sub-Problem

The third sub-problem of the research is related to determine the difference in the entrepreneurship levels of pre-service Physical Education and Sports School teachers based on the variable of gender, instruction of entrepreneurship lecture and grade. The findings related to the third sub-problem are presented in Table 4, Table 5, Table 6 and Table 7.

Table 4: Entrepreneurship Characteristics Based on The Gender Variable

Entrepreneurship	N	$\bar{X}$	SD	t	p
Male	140	4,17	0,420	-1,273	0,204
Female	100	4,24	0,406		

\*p<0.05

As it is seen in Table 4, it is understood that no significant differentiation ( $t=-1.273$ ,  $p>0.05$ ) in the entrepreneurship scores of pre-service teachers emerged based on gender as a result of the independent group t-test that was performed to determine whether the Entrepreneurship characteristics of the pre-service teachers show any significant difference based on the gender variable.

Table 5: Entrepreneurship Characteristics Based on The Grade Variable

Entrepreneurship	Grade	N	$\bar{X}$	SD	V	Sum of Sqrs	df	Mean of Sqrs	F	p	Tukey Test
	1.Grade	60	4,00	0,401	Between Groups	4,405	3	1,468	9,415	.000*	1. & 2. 1. & 3. 2. & 4.
2.Grade	60	4,35	0,284	Within Groups	36,648	236	0,156				
3.Grade	60	4,30	0,321	Total	41,053	239					
4.Grade	60	4,14	0,526								

\*p&lt;0.05

As it is seen in Table 5, a significant difference was found between grades ( $p < 0.05$ ) as a result of the unidirectional variance analysis (ANOVA) performed to determine whether the entrepreneurship characteristics of pre-service teachers show a significant difference based on the grade variable. Tukey test was performed to determine in which grade levels these differences exist.

As a result of the Tukey test; a significance is seen in favor of the 2nd grade between the 1st grade and the 2nd grade ( $\bar{x} = 4,00 - \bar{x} = 4,35$ ), in favor of the 3rd grade between the 1st and the 3rd grades ( $\bar{x} = 4,00 - \bar{x} = 4,30$ ) and in favor of the 2nd grade ( $\bar{x} = 4,35 - \bar{x} = 4,14$ ) between the 2nd and the 4th grades.

Table 6: Entrepreneurship Characteristics Based on Teaching of Entrepreneurship Lecture Variable

Teaching of Entrepreneurship Lecture	N	$\bar{X}$	SD	t	p
Yes	58	4,24	0,366	0,835	0,404
No	182	4,19	0,429		

\*p&lt;0.05

In Table 6, it is seen that no significant differentiation ( $t = -0.835$ ,  $p > 0.05$ ) in the entrepreneurship scores of pre-service teachers emerged based on the entrepreneurship lecture as a result of the independent group t-test that was performed to determine whether the Entrepreneurship characteristics of the pre-service teachers show any significant difference based on the status of Teaching of Entrepreneurship Lecture variable.

Table 7: ANOVA Test of Entrepreneurship Characteristics Based on The Work Experience Variable

Work Experience	Time	N	$\bar{X}$	SD	V	Sum of Squares	df	Mean of Squares	F	p	Scheffe Test
	I haven't worked before	58	4,10	0,383	Between Groups	2,118	4	0,530	3,183	.014*	I haven't worked before & 1-6 Months
1-6 Months	80	4,15	0,401	Within Groups	38,935	234	0,166				
7-11 Months	19	4,31	0,390	Total	41,053	238					
1-3 Years	34	4,37	0,446								
3 Years & More	48	4,25	0,415								

\*p&lt;0.05

As it is seen in Table 7, a significant difference was found between the groups ( $p < 0.05$ ) as a result of the unidirectional variance analysis (ANOVA) performed to determine whether the entrepreneurship characteristics of pre-service teachers show a significant difference based on the work experience variable. Scheffe test was performed to determine in which group levels these differences exist. Scheffe test (Kayri, 2009, 54), this method, which was developed to compare all of the linear combinations that are possible among groups, is considered as the most flexible type of post hoc ignoring the assumption of the equality of observation in groups and controlling the  $\alpha$  margin of error in cases where the number of groups to be compared are high.

As a result of the Scheffe test, it is seen that the group forming the significant difference is in favor of 1-6 Months between “*I have not worked before*” and “*1- 6 Months*” ( $\bar{x} = 4,10 - \bar{x} = 4,15$ ).

### 3.4. Findings Related to the Fourth Sub-Problem

The fourth sub-problem of the research is related to determine the difference in the reflective thinking levels of pre-service Physical Education and Sports School teachers based on the variable of gender and grade. The findings related to the fourth sub-problem are presented in Table 8 and Table 9.

Table 8: T-Test Related to Reflective Thinking Levels Based on Gender Variable

Sub-dimensions	Gender	N	$\bar{X}$	SD	t	p																																																															
Constant and Oriented Thinking	Erkek	140	3,97	0,53	-0,972	0,332																																																															
	Kadın	100	4,03	0,48			Open-Mindedness	Erkek	140	4,43	0,68	-1,223	0,222	Kadın	100	4,53	0,59	Interrogative and Effective Teaching	Erkek	140	4,64	0,67	-2,200	0,029*	Kadın	100	4,81	0,41	Teaching Responsibility and Scientificness	Erkek	140	4,23	0,67	-1,532	0,127	Kadın	100	4,36	0,65	Researcher	Erkek	140	4,04	0,78	-1,684	0,094	Kadın	100	4,21	0,68	Being visionary and sincere	Erkek	140	4,10	0,85	-2,197	0,025*	Kadın	100	4,33	0,74	Viewing to vocation	Erkek	140	4,32	0,99	-1,972	0,043*	Kadın
Open-Mindedness	Erkek	140	4,43	0,68	-1,223	0,222																																																															
	Kadın	100	4,53	0,59			Interrogative and Effective Teaching	Erkek	140	4,64	0,67	-2,200	0,029*	Kadın	100	4,81	0,41	Teaching Responsibility and Scientificness	Erkek	140	4,23	0,67	-1,532	0,127	Kadın	100	4,36	0,65	Researcher	Erkek	140	4,04	0,78	-1,684	0,094	Kadın	100	4,21	0,68	Being visionary and sincere	Erkek	140	4,10	0,85	-2,197	0,025*	Kadın	100	4,33	0,74	Viewing to vocation	Erkek	140	4,32	0,99	-1,972	0,043*	Kadın	100	4,56	0,81								
Interrogative and Effective Teaching	Erkek	140	4,64	0,67	-2,200	0,029*																																																															
	Kadın	100	4,81	0,41			Teaching Responsibility and Scientificness	Erkek	140	4,23	0,67	-1,532	0,127	Kadın	100	4,36	0,65	Researcher	Erkek	140	4,04	0,78	-1,684	0,094	Kadın	100	4,21	0,68	Being visionary and sincere	Erkek	140	4,10	0,85	-2,197	0,025*	Kadın	100	4,33	0,74	Viewing to vocation	Erkek	140	4,32	0,99	-1,972	0,043*	Kadın	100	4,56	0,81																			
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	Kadın	100	4,36	0,65			Researcher	Erkek	140	4,04	0,78	-1,684	0,094	Kadın	100	4,21	0,68	Being visionary and sincere	Erkek	140	4,10	0,85	-2,197	0,025*	Kadın	100	4,33	0,74	Viewing to vocation	Erkek	140	4,32	0,99	-1,972	0,043*	Kadın	100	4,56	0,81																														
Researcher	Erkek	140	4,04	0,78	-1,684	0,094																																																															
	Kadın	100	4,21	0,68			Being visionary and sincere	Erkek	140	4,10	0,85	-2,197	0,025*	Kadın	100	4,33	0,74	Viewing to vocation	Erkek	140	4,32	0,99	-1,972	0,043*	Kadın	100	4,56	0,81																																									
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	Kadın	100	4,56	0,81																																																																	

\* $p < 0,05$

Upon examining the findings in Table 8, a statistically significant difference is shown in the interrogative and effective teaching, being visionary and sincere and viewing to vocation sub-dimensions as a result of the independent group's t-test, which is performed to determine whether the reflective thinking tendency sub-dimensions of pre-service teachers show significant difference based on gender variable ( $p < 0.05$ ). Upon examining the arithmetic mean values, it is seen that the difference is the favor of females in the interrogative and effective teaching, being visionary and sincere and viewing vocation sub-dimensions. Generally viewing, it can be said that female pre-service teachers are in the tendency to reflective thinking at a higher level than male pre-service teachers.



Table 9: ANOVA Test of Reflective Thinking Levels Based on Grade Variable

Sub-dimensions	Grade	N	$\bar{X}$	SD	V	Sum of Sqr	df	Mean of Sqr	F	p	Tukey Testi
Constant and Oriented Thinking	1.Grade	60	3,89	0,5	Between Groups	1,152	3	0,384	1,43	0,235	-
	2.Grade	60	4,06	0,4	Within Groups	63,379	236	0,269			
	3.Grade	60	4,05	0,5	Total	64,531	239				
	4.Grade	60	3,98	0,6							
Open-Mindedness	1.Grade	60	4,16	0,9	Between Groups	9,724	3	3,241	8,373	,000*	1.& 2. 1.& 3. 1.& 4.
	2.Grade	60	4,51	0,4	Within Groups	91,367	236	0,387			
	3.Grade	60	4,73	0,4	Total	101,092	239				
	4.Grade	60	4,47	0,7							
Interrogative and Effective Teaching	1.Grade	60	4,37	0,9	Between Groups	12,582	3	4,184	14,186	,000*	1.& 2. 1. & 3. 2.& 4. 3.& 4.
	2.Grade	60	4,92	0,2	Within Groups	69,77	236	0,296			
	3.Grade	60	4,92	0,2	Total	82,352	239				
	4.Grade	60	4,63	0,6							
Teaching Responsibility and Scientifinness	1.Grade	60	4,06	0,7	Between Groups	9,586	3	3,195	7,723	,000*	1.& 2. 1.& 3. 2.& 4.
	2.Grade	60	4,48	0,5	Within Groups	97,646	236	0,414			
	3.Grade	60	4,48	0,5	Total	107,232	239				
	4.Grade	60	4,11	0,8							
Researcher	1.Grade	60	3,88	0,8	Between Groups	12,397	3	4,132	8,009	,000*	1.& 2. 1.& 3. 2.& 4.
	2.Grade	60	4,33	0,7	Within Groups	121,77	236	0,516			
	3.Grade	60	4,35	0,5	Total	134,167	239				
	4.Grade	60	3,89	0,8							
Being visionary and sincere	1.Grade	60	4,07	0,8	Between Groups	6,778	3	2,259	3,49	0,016*	2.& 4.
	2.Grade	60	4,37	0,7	Within Groups	152,784	236	0,647			
	3.Grade	60	4,35	0,6	Total	159,562	239				
	4.Grade	60	3,99	1,1							
Viewing to vocation	1.Grade	60	4	1,1	Between Groups	20,846	3	6,949	8,833	,000*	1.& 2. 1.& 3. 3.& 4.
	2.Grade	60	4,69	0,7	Within Groups	185,65	236	0,787			
	3.Grade	60	4,7	0,5	Total	206,496	239				
	4.Grade	60	4,27	1,1							

\*  $p < 0.05$

As a result of the unidirectional variance analysis (ANOVA) conducted to determine whether reflective thinking tendency sub dimensions show significant difference based on the grade level variable in Table 9, a significant difference was found in all sub dimensions except for *Constant and Oriented Thinking* sub dimension ( $p > 0.235$ ) ( $p < 0.05$ ). Tukey test was conducted to determine the grade level of those differences as the number of samples was equal in the groups (Tukey, 1949, cited in Kayri, 2009).

When the results of the test that were conducted are reviewed at the level of sub dimensions:

- “*Open-Mindedness*” was found in favor of the 2nd grade between the 1st and the 2nd grade ( $\bar{x} = 4,16 - \bar{x} = 4,51$ ), it was found in favor of the 3rd grade between the 1st and the 3rd grade ( $\bar{x} = 4,16 - \bar{x} = 4,73$ ), and it was found in favor of the 4th grade between the 1st and the 4th grades ( $\bar{x} = 4,16 - \bar{x} = 4,47$ ).
- In the “*Interrogative and Effective Teaching*” sub dimension, based on the Tukey test result, a significance was observed in favor of the 2nd grade between the 1st and the 2nd grades ( $\bar{x} = 4,37 - \bar{x} = 4,92$ ), it was observed in favor of the 3rd grade ( $\bar{x} = 4,37 - \bar{x} = 4,92$ ) between the 1st grade and the 3rd grade, it was observed in favor of the 2nd grade ( $\bar{x} = 4,92 - \bar{x} = 4,63$ ) between the 2nd grade and the 4th grade, and it was observed in favor of the 3rd grade ( $\bar{x} = 4,92 - \bar{x} = 4,63$ ) between the 3rd and the 4th grades.
- A significance was found in the “*Teaching Responsibility and Scientificness*” sub dimension in favor of the 2nd grade ( $\bar{x} = 4,06 - \bar{x} = 4,48$ ) between the 1st grade and the 2nd grade, it was found in favor of the 3rd grade between the 1st grade and the 3rd grade ( $\bar{x} = 4,06 - \bar{x} = 4,48$ ), a significance was found in favor of the 2nd grade between the 2nd grade and the 4th grade ( $\bar{x} = 4,48 - \bar{x} = 4,11$ ).
- In the *Researcher* sub dimension; a significance is seen in favor of the 2nd grade between the 1st grade and the 2nd grade ( $\bar{x} = 3,88 - \bar{x} = 4,33$ ), in favor of the 1st grade between the 1st and the 3rd grades ( $\bar{x} = 3,88 - \bar{x} = 4,35$ ) and in favor of the 2nd grade ( $\bar{x} = 4,33 - \bar{x} = 3,89$ ) between the 2nd and the 4th grades.
- When the “*Being visionary and sincere*” sub dimension is examined, a significance is seen in favor of the 2nd grade between the 2nd grade and the 4th grade ( $\bar{x} = 4,37 - \bar{x} = 3,99$ ).
- Furthermore, in the last sub dimension, *Viewing to vocation*, a significance is seen in favor of the 2nd grade between the 1st grade and the 2nd grade ( $\bar{x} = 4,00 - \bar{x} = 4,35$ ), in favor of the 3rd grade between the 1st and the 3rd grades ( $\bar{x} = 4,00 - \bar{x} = 4,70$ ) and favor of the 3rd grade ( $\bar{x} = 4,70 - \bar{x} = 4,27$ ) between the 3rd and the 4th grades.

### 3.5. Findings Related to the Fifth Sub-Problem

The fifth sub-problem of the research is related to determining the relationship between the reflective thinking levels and the entrepreneurship levels of the pre-service Physical Education and Sports Teachers. The findings of the fifth sub-problem are shown in Table 10.

Table 10: The Results of The Correlation Analysis Related to the Entrepreneurship Characteristics and The Reflective Thinking Sub dimensions

N=240								
	Entrepreneurship	Constant and Oriented Thinking	Open mindedness	Interrogation and Effective Teaching	Teaching Responsibility and Scientificness	Researcher	Being Visionary and Sincere	Viewing to Vocation
Entrepreneurship	1	0,378*	0,302*	0,407*	0,397*	0,369*	0,317*	0,201*

\*p<0.01

As it is seen in Table 10, as a result of the Pearson Correlation Analysis conducted to determine the relationship between the reflective thinking levels and the entrepreneurship characteristics of the pre-service teachers, it was found that there was a significant positive relationship between entrepreneurship and all reflective thinking sub dimensions.

- Constant and Oriented Thinking ( $r=0,378^*$ ,  $p<0.01$ ),
- Open mindedness ( $r=0,302^*$ ,  $p<0.01$ )
- Interrogative and Effective Teaching ( $r=0,407^*$ ,  $p<0.01$ ),
- Teaching Responsibility and Scientificness ( $r= 0,397^*$ ,  $p<0.01$ ),
- Researcher ( $r=0,369^*$ ,  $p<0.01$ ),
- Being Visionary and Sincere ( $r=0,317^*$ ,  $p<0.01$ )
- Viewing to Vocation ( $r=0,201^*$ ,  $p<0.01$ )

It can be interpreted that there is a weak linear relation in the same direction between the variances. In other words, the entrepreneurship characteristics of the pre-service teachers increase as parallel to their reflective thinking characteristics. The point that should be stated is that the correlation factor does not prove anything for the casual relationship. It is only a measure of the combined change of the variances (Bayram,2015, 181).

#### 4. Results, Discussion and Suggestions

##### 4.1. Discussion and Result

In this research, the entrepreneurship characteristics and the reflective thinking levels of the pre-service teachers studying at Bartın University Physical Training and Sports School (2017-2018 Academic year) are examined. In the relevant researches, the concept of entrepreneurship appeared before us as a mental skill in the broadest sense. This is accepted as the motivation to evaluate this opportunity to detect an opportunity and form value as single or within the team.

In our education system, the concept of entrepreneurship attained its place through forming new education programs in 2005. In this regard, the education system was affected by the developments worldwide, and the

teachers' taking a proactive role shall be through the entrepreneurship characteristics. The educational institutions, especially the institutions educating teachers, can educate and improve pre-service teachers in entrepreneurship to respond to this need. Several research pieces based on the entrepreneurship characteristics and tendencies revealed threats and opportunities in the education system and the education environment and provided information concerning the general framework. This study and other studies performed within this field have the characteristics to be a part and continuation of the whole.

If the need arises to summarize the demographic information of the pre-service teachers participating in our research, 140 of the total 240 participants are males, 100 are females, and the grades are formed of an equal number of students. Considering the age variable, the majority of the pre-service teachers were between 21-23 years old with a ratio of 46.8%, and the least encountered were those aged 26 and older with a ratio of 2.9%. In the state of education of entrepreneurship lecture, which is another variable, 24.2% was calculated as "Yes," and 75.8% was calculated as "No." Considering these percentages, we can say that teaching of entrepreneurship lectures was not generalized. Furthermore, in the finding that we obtained based on the replies belonging to the work experience variable of the pre-service teachers, 1-6 months has the highest percentage with 33.3%, while 7-11 Months has the lowest percentage with 7.9%. Furthermore, the percentage of those with no work experience and those with over 3 years of work experience is significant.

Upon summarizing the findings of the reflective thinking levels of the pre-service teachers participating in the research, it is seen in the mean of sub dimensions that the highest arithmetic means resulted in "*Interrogative and Effective Teaching*" ( $\bar{x}=4,71$ ) sub dimension, the lowest arithmetic mean resulted in "*Constant and Oriented Thinking*" ( $\bar{x}=4,00$ ) sub dimension. Within this context, considering the lowest arithmetic mean value, 4.00 shows that the reflective thinking tendencies of the pre-service teachers are generally high. It was revealed in Yanpar, and Duban's (2010) article study entitled "The Opinions of The Pre-Service Teachers Relating to The Reflective Thinking Tendencies and Reflective Teacher Characteristics" that the reflective thinking means of the pre-service teachers were high, similarly in Alkan and Gözel's (2012) study entitled "The Opinions of Pre-Service Form Teachers Relating to the Reflective Thinking Skills" the reflective thinking levels of teachers were high, and these studies support our research.

Here, it can be deduced that reflective thinking is a type of thinking which primarily teachers should have, and those teachers with this skill can guide their students within the scope of these opinions (Karadağ, 2010).

A statistically significant difference is shown in the interrogative and effective teaching, being visionary and sincere and viewing to vocation sub-dimensions as a result of the independent group's t-test, which is performed to determine whether the reflective thinking tendency sub-dimensions of pre-service teachers show significant difference based on gender variable ( $p<0.05$ ). Upon examining the arithmetic mean values, it is seen that the difference is the favor of females in the interrogative and effective teaching, being visionary and sincere and viewing vocation sub-dimensions. Generally viewing, it can be said that female pre-service teachers are in the tendency to reflective thinking at a higher level than male pre-service teachers.

Although this matter was explained by the difference in the tendency between female and male pre-service teachers, it can be derived from women being more enthusiastic than men, especially in education and training. In Aslan's (2009) study entitled "Association of The Relation Between Reflective Thinking Tendencies and Constant Anxiety Levels of Form Teachers," it is stated that being a woman and acting patient and cautious in reflective thinking sub dimensions will provide an advantage in reflective thinking tendency. In a similar study, in Hasırcı and Sadık's (2011) article study entitled "Examining The Reflective Thinking Tendencies of Classroom Teachers " it was found that female teachers had higher reflective thinking tendency than male teachers.

As a result of the unidirectional variance analysis (ANOVA) conducted to determine whether reflective thinking tendency sub dimensions show significant difference based on the grade level variable, a significant difference was found in all sub dimensions except for *Constant and Oriented Thinking* sub dimension ( $p>0.235$ ) ( $p<0.05$ ).

Tukey test was performed to determine in which grade levels these differences exist. Upon reviewing Tukey's results, it attracts attention that the 1st grades form differences in reflective thinking. It is thought that the decrease in the tendency of reflective thinking upon the advancement of grade-level arises from the increase in the vocational concern, the decrease in the learning tenacity, loss of the sense of wonder and differentiation in the perspective of the profession. The studies supporting this matter are present as thesis study by Ceyhan (2014) entitled "Determining the Entrepreneurship Characteristics of University Students" and the thesis study of Kaya (2009) entitled "Examination of the Thinking Styles and Mathematics Academic Success of the 6th, 7th, 8th Grade Students in Primary School Based on The School Type, Gender and Grade Level".

It can be expressed upon reviewing the characteristics of the pre-service teachers on entrepreneurship that the result obtained from the entrepreneurship scale is at the "*High Entrepreneurship*" level. This indication shows that the entrepreneurship characteristics of the pre-service teachers are high. Similar results were obtained in many types of research conducted concerning the entrepreneurship characteristics of university students. The entrepreneurship tendencies of pre-service teachers are researched in some studies such as Pan and Akay (2015) "Examining Teacher Candidates' Entrepreneurship Levels In Terms of Various Variables," Akyürek (2013), "Evaluation of Elementary Teachers' Entrepreneurship Skills," Yıldız and Kapu (2012) "The Relationship Between Individual Values And Entrepreneurship Tendency Of University Students: A Research On Kafkas University," Kılıç, Keklik and Çalış, (2012) "A Study On Entrepreneurship Tendency Of University Students : Example Of Bandırma Department Of Business Administration," Köstekçi (2015) "Examining the Relationship Between Entrepreneurship Characteristics and Reflective Thinking Levels of Pre-service Teachers " and Akhtar, Keith and Riaz (2009) "Entrepreneurship Tendencies of Pre-service Teachers."

It is seen that no significant differentiation in the entrepreneurship scores of pre-service teachers was present based on gender as a result of the independent group t-test that was performed to determine whether the Entrepreneurship characteristics of the pre-service teachers show any significant difference based on the gender variable. However, it is seen that the arithmetic mean value of female pre-service teachers was 4.24, and the arithmetic mean value of male pre-service teachers was 4.17. It can be said that female pre-service teachers are at a "*Very High entrepreneurship*" level, male pre-service teachers are at the "*High Entrepreneurship*" level, and such values are significant. The non-formation of differentiation might be that male and female teachers feel the same economic anxiety.

A significant difference was found between grades due to the unidirectional variable analysis (ANOVA) performed to determine whether the entrepreneurship characteristics of pre-service teachers show a significant difference based on the grade variable. Tukey test was performed to determine in which grade levels these differences exist.

As a result of the Tukey test; a sign is seen on behalf of the 2nd grade between the 1st grade and the 2nd grade ( $\bar{x}= 4,00-\bar{x}=4,35$ ), in favor of the 3rd grade between the 1st and the 3rd grades ( $\bar{x}= 4,00-\bar{x}=4,30$ ) and in favor of the 2nd grade ( $\bar{x}= 4,35-\bar{x}=4,14$ ) between the 2nd and the 4th grades. It is seen in the obtained results that the entrepreneurship characteristics mean values of 2nd Grade and 3rd Grade pre-service teachers affect the findings statistically. Devenci and Çepni's study (2014) entitled "Entrepreneurship in Science Teacher Education" stated that the entrepreneurship characteristics of the pre-service teachers with entrepreneurship characteristics in the institution's training teachers are expected to be higher in the upper grades.

Another test was to determine whether the Entrepreneurship characteristics of the pre-service teachers show any significant difference based on the status of Teaching of Entrepreneurship Lecture variable. It resulted that no significant differentiation in the entrepreneurship scores of pre-service teachers was present based on the entrepreneurship lecture. Here it is seen that only 24.2% of the students participating in the research received entrepreneurship lectures. It can be interpreted that the students received no or insufficient entrepreneurship lectures during their secondary education and undergraduate education, and this education has not become widespread in educational institutions. It appears to attract attention in the research, which should be cared about and examined in a more detailed way. This variable was not found in the other studies that were examined.

A significant difference was found between the groups due to the unidirectional variance analysis (ANOVA) performed to determine whether the entrepreneurship characteristics of pre-service teachers show a significant difference based on the work experience variable, which is examined in the following variable. The groups that determine the difference are interpreted through the Scheffe test. In the Scheffe test, it is seen that the group forming the significant difference is in favor of 1-6 Months between “*I have not worked before*” and “*1- 6 Months*” ( $\bar{x}= 4,10-\bar{x}=4,15$ ). This significance can be explained by the high percentages of “*I have not worked before*” and “*1-6 months*” groups.

The relationship between the reflective thinking tendencies and the entrepreneurship characteristics of pre-service teachers, which is the last test, was conducted by Pearson Correlation Analysis. A positive and significant relationship was found between entrepreneurship and all reflective thinking sub dimensions. Accordingly, it is seen that the entrepreneurship characteristics of the pre-service teachers increase parallel to their reflective thinking characteristics.

Based on these tests, it is considered that the pre-service teachers which we examined through various variables are potential entrepreneurs and the other studies conducted to support this consideration. Valuable teachers are educated by developing the university students' high order thinking skills, especially the pre-service teachers in the institutions educating teachers. They are introduced to society as role models, and the individuals with entrepreneurship potentials can contribute to society as a locomotive of productive societies.

#### 4.2. Suggestions

Some lacking details or details that should be developed are mentioned briefly in this section. First of all, the reflective thinking levels and entrepreneurship characteristics, which decrease in the last grade of education faculties, should be examined through various varieties again, and the cause of this decrease should be determined. As the pre-service teachers' reflective thinking levels favor female pre-service teachers, the studies for the determination of the reflective thinking levels of the male pre-service teachers can be re-conducted.

Qualitative and quantitative studies can be performed on the individuals that can be reached after graduation about whether the pre-service teachers with high entrepreneurship levels use this feature in their professional lives, and the outcomes of the education can be measured in this field.

The entrepreneurship characteristics can be associated with the scales belonging to reflective thinking and high-order thinking skills.

Regional and national frames can be determined and compared by the participation of the pre-service teachers in the Sports Sciences department and School of Physical Education and Sports of other universities. Furthermore, the study applied to only the pre-service teachers in the School of Physical Education and Sports can be extended to other departments (Sports Management, Recreation, Coaching).

It can be suggested that the studies mentioned here can be supported by measuring the entrepreneurship characteristics of the participants, who are defined as reflective thinking teachers.

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