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## Evaluation of the Constructivist Learning Environments of Physical Education Teacher Candidates \*

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**Abstract:** The aim of this research is to evaluate the constructivist learning environments of physical education and sport teacher candidates. For this purpose, 928 students (523 male, 405 female) selected by the appropriate sampling method from the Physical Education and Sport Teaching Department of 17 universities consisted the sample of the research. In the study; "Constructivist Learning Environments Evaluation Scale" developed by Arkun and Askar (2010) was used in order to reveal the opinions of the students about the constructivist learning environment. The scale consists of 7 Likert type, 6 sub dimensions and 28 items. The Cronbach alpha reliability coefficient for this study was found to be .93. The lowest score that can be taken from the scale is 28 and the highest score is 196. Kruskal Wallis Variance Analysis and Mann Whitney U test were used because the obtained data did not show normal distribution (Kolmogorov-Smirnov), and the significance level was taken as 0.05. As a result of the research, the constructivist learning environments of 17th universities 3rd and 4th grade teacher candidates were evaluated in terms of age, gender and grade variables. According to this, there was no significant difference when the average scores of constructivist learning environments were compared in terms of age and class levels of physical education and sports teacher candidates. In comparison with gender, female teacher candidates were found to have a more constructive learning environment.

**Keywords:** *Physical Education, teacher candidate, constructivist learning, learning environments.*

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### Introduction

In 1980s, the research of Dewey and Vygotskij had blended with Piaget's work in developmental psychology into the broad approach of constructivism. The basic principle of constructivism is that students learn by doing rather than observing. Students bring prior knowledge into a learning situation in which they must critique and re-evaluate their understanding of it. This process of interpretation, articulation, and re-evaluation is repeated until they can demonstrate their comprehension of the subject. Constructivism often utilizes collaboration and peer criticism as a way of provoking students to reach a new level of understanding. Active practice is the key of any constructivist lesson. To make an analogy, if you want to learn how to ride a bike, you don't pick a book on bicycle theory - you get on the bike and practice it until you get it right. It is this repetition of practice and review that leads to the greatest retention of knowledge (Dewey, 1916; Vygotskij et al., 1987).

The meaning of "Constructivism" is expressed in different names such as constructivism, structuring, structuring in mind, structuralism, constructivism, integrative in Turkish (Bagci and Kilic, 2001, Bay, 2008). Basically in the constructivist learning ; there are processes of researching, interpreting and analyzing information between previous learning and new learning. Learning according to constructivism; the product of life is the change of mental structure, the reorganization of the mind. Constructivism refers to the structuring of information by the student. According to Sonmez and Alacapinar (2011), the real knowledge is not definite and because the reality is the measure of the human being, the aim of constructivist learning is to create an opportunity for the individuals to internalize the knowledge they learn. In constructivism, individuals do not receive the same knowledge, they learn by adapting the new knowledge to their own subjective situations together with the existing knowledge (Ozden, 2003). The constructivist

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philosophy has a different structure from the other approach in terms of the nature and source of information (Sasan, 2002). Sonmez (2008) argues that constructivist understanding is based on utilitarian philosophy. With the constructivist understanding, the tasks of the teacher and the student in the class have also changed, and the teacher has a great role in using constructivism. The constructivist teacher is a person who is confident, open-minded, adopts a different approach to change the traditional discipline understanding that can change itself according to the innovations of the age, takes into consideration personal differences in learning processes, provides qualified learning environments and learns with learners (Demirel, 2008). While constructivist approach seeing the learning as actively creating knowledge, but seeing the teaching as a facilitator, guider, supporter and router of the learning process rather than transferring knowledge from teacher to student (Duffy, Cunningham, 1996; Wells, 1995; Wittrock, 1990). Thus, the teacher will be a guide, an assistant, or a guide to facilitate the learning of the students. The main actors of the constructivist approach are not only teachers and students but also learning environments. Learning environments contribute positively or negatively to the learning efficacy of the learners in the process of the meaningfulness of the information. Whether this contribution is positive or negative depends on whether the learning environment is prepared in accordance with the child's development periods (Demirtas, Oguz, Oredi, Akbasli, 2015). The important role of the teacher in the constructivist environment has caused the learning environments of teacher training institutions to be constructive environments (Demirtas, Oguz, Oredi, Akbasli, 2015). Although constructivism can be applied at all levels of education, advanced learners, adults in other words university students are more suited for them (Jonassen, Mayes, McAleese, 1993; trans:Tynjala, 1999). In the age of knowledge, universities should be able to respond to individual and societal expectations, to solve problems and contribute to their needs, and to enable their students to fulfill the roles of "learning" peculiar to the information age. This can be achieved by arranging the constructivist learning environments in universities (Oguz, 2004). Uredi and Uredi (2007) indicate that learning environments can be organized so that students develop self-regulation skills, it will ensure that students with high self-regulation skills will be able to use their learning strategies and knowledge effectively, emphasize that students with low self-regulation skills will learn how to organize their learning. In teacher training institutions, constructivist learning environments must ensure that teacher candidates acquire knowledge and connect with old information. The teacher candidate should be introduced to the constructor environment and prepare himself for the professional life. For this reason, the purpose of the research was "to evaluate the constructivist learning environments of physical education and sport teacher candidates".

### Methodology

In this research, survey technique of quantitative research method was used. Survey models are approaches that seek to investigate as if they existed in the past or in the present. In these researches there is no way to influence or change the result in any way. In the general survey model, the goal is to make all the universe or a meaningful sample in order to arrive at a judgment about the universe with many elements (Karasar, 2016).

#### *Universe and Sampling*

The universe of the study consisted of Physical Education and Sports Teaching departments of all state universities in Turkey. The sample of the research was composed of 928 students from the departments of Physical Education and Sport Teaching of 17 universities which were chosen by proper sampling method from the universe. In the Appropriate Sampling method, the researcher sets up a sample to begin with the most available responders until a large group reaches the required size (Cohen and Manion, 1998).

#### *Data Collection Tool*

In the study; "Constructivist Learning Environment Assessment Scale" developed by Arkun and Askar (2010) was applied in order to reveal the opinions of the students about the constructivist learning environment. The scale is of Likert type 7 and consists of 28 items. Scale is based on six factors including; "student-centered", "thinking", "collaborative", "life-related", "coexistence of teaching and evaluation " and "giving different perspectives". The total variance explained by the mentioned factors was found to be 66.65%. The original Cronbach's alpha coefficient was .96 and in our study it was .93. The lowest score that can be taken from the scale is 28 and the highest score is 196. The appropriateness of the averages to the constructivism is directly proportional to the score obtained from the scale, and as the score increases, the conformity with the constructivism increases. In the study; After obtaining permission to use the scale from those who developed scale, ethics permission were taken from Cumhuriyet University Research and Publication Ethics Board. In order to collecting the data, scale were applied to 928 students who were studying at 3rd and 4th grade of Physical Education and Sports Teaching departments of 17 universities in different regions of Turkey in 2016 - 2017 academic year.

Table 1: Characteristics of the Study Group

Variables		f	%
Age	20 years	100	10.8
	21 years	273	29.4
	22 years and above	555	59.8
Gender	Male	523	56.4
	Female	405	43.6
Grade	3rd grade	499	53.8
	4rd grade	429	46.2

When Table 1 is examined; 100 (10.8%) of the teacher candidates participating in the research were 20 years old, 273 (29.4%) were 21 years old and 555 (46.2%) were 22 years old or older. 523 (56.4%) of the participants were male and 405 (43.6%) were females. 499 students (53.8) were in the 3rd grade and 429 students were in the 4th grade.

#### Analyzing of Data

Since the obtained data were not normal distributions (Kolmogorov-Smirnov), Kruskal Wallis Variance Analysis and Mann Whitney U test were used and the significance level was taken as 0.05.

### Findings / Results

Table 2. Comparison of The Sub-dimension and Total Scores of Physical Education and Sports Teacher Candidates by Age Variable

Factors	Age	N	Mean	S.Dev.	Median	Min	Max	Result
Total	20 Years	100	137,28	25,57	135,00	59,00	185,00	p=0,342
	21 Years	273	133,76	23,40	152,00	51,00	196,00	
	22 Years >	555	135,68	23,65	135,00	52,00	196,00	
Student-Centered	20 Years	100	19,27	4,43	19,50	7,00	28,00	p=0,578
	21 Years	273	19,10	4,06	19,00	5,00	28,00	
	22 Years >	555	19,41	3,96	20,00	7,00	38,00	
Thinking	20 Years	100	34,37	6,69	35,00	18,00	48,00	p=0,539
	21 Years	273	33,48	6,85	34,00	7,00	49,00	
	22 Years >	555	34,03	6,38	34,00	15,00	49,00	
Collaborative	20 Years	100	19,08	4,47	19,50	7,00	28,00	p=0,035*
	21 Years	273	18,20	4,18	18,00	6,00	28,00	
	22 Years >	555	18,89	4,05	19,00	7,00	28,00	
Life-Related	20 Years	100	20,01	4,41	20,00	6,00	28,00	p=0,520
	21 Years	273	19,57	3,92	19,00	6,00	28,00	
	22 Years >	555	19,70	4,30	20,00	4,00	28,00	
Coexistence of Teaching and Evaluation	20 Years	100	18,99	4,17	19,00	7,00	28,00	p=0,738
	21 Years	273	18,73	4,21	19,00	4,00	28,00	
	22 Years >	555	18,98	4,06	19,00	4,00	28,00	
Giving Different Perspectives	20 Years	100	25,56	5,17	26,00	9,00	35,00	p=0,243
	21 Years	273	24,65	5,80	25,00	6,00	73,00	
	22 Years >	555	24,65	4,82	25,00	8,00	35,00	

\*p<0.05

When Table 2 is examined; there was no significant difference when the total scores of physical education and sport teacher candidates participating in the research were compared according to age variable ( $p > 0.05$ ). When sub-dimensions were compared according to age groups, there was significant difference between the ages according to the "cooperative" sub-dimension ( $p < 0.05$ ). When the scores of age groups are compared with each other; there were significant differences between 20 and 21 years of age and between 21 and >22 years of age ( $p < 0.05$ ). Between 20 and 22 years of age there was no significant difference ( $p > 0.05$ ).

Table 3. Comparison of Sub-dimension and Total Scores of Physical Education Teacher Candidates by Gender Variable

Factors	Gender	N	Mean	S. Dev.	Median	Min	Max	Result
<b>Total</b>	Male	523	133,11	23,34	132,00	51,00	190,00	p=0,002*
	Female	402	138,06	24,15	137,00	59,00	196,00	
<b>Student-Centered</b>	Male	523	19,01	4,01	19,00	5,00	38,00	p=0,006*
	Female	402	19,68	4,06	20,00	7,00	28,00	
<b>Thinking</b>	Male	523	33,49	6,54	34,00	7,00	49,00	p=0,022*
	Female	402	34,42	6,56	35,00	10,00	49,00	
<b>Collaborative</b>	Male	523	18,39	4,05	18,00	6,00	28,00	p=0,006*
	Female	402	19,11	4,25	20,00	7,00	28,00	
<b>Life-Related</b>	Male	523	19,34	4,30	20,00	4,00	28,00	p=0,008*
	Female	402	20,15	4,04	20,00	6,00	28,00	
<b>Coexistence of Teaching and Evaluation</b>	Male	523	18,62	4,21	19,00	4,00	28,00	p=0,019*
	Female	402	19,28	3,97	19,00	4,00	28,00	
<b>Giving Different Perspectives</b>	Male	523	24,25	4,92	24,00	6,00	35,00	p=0,002*
	Female	402	25,40	5,41	25,00	8,00	73,00	

\*p&lt;0.05

When Table 3 is examined; The differences between total and subscale scores according to gender of physical education and sport teacher candidates included in the survey were found to be significant ( $p < 0.05$ ). According to this, the average scores of female candidates are higher than the average of male candidates in both total and sub-dimensions.

Table 4. Comparison of Sub-dimension and Total Scores of Physical Education Teacher Candidates by Class Variable

Factors	Grade	N	Mean	S. Dev.	Median	Min	Max	Result
<b>Total</b>	3	499	135,32	25,14	133,00	51,00	196,00	p=0,694
	4	429	135,25	22,13	136,00	59,00	186,00	
<b>Student-Centered</b>	3	499	19,34	4,28	19,00	5,00	38,00	p=0,987
	4	429	19,26	3,74	20,00	7,00	28,00	
<b>Thinking</b>	3	499	33,89	6,91	34,00	7,00	49,00	p=0,773
	4	429	33,92	6,12	34,00	10,00	49,00	
<b>Collaborative</b>	3	499	18,67	4,18	19,00	6,00	28,00	p=0,551
	4	429	18,75	4,11	19,00	7,00	28,00	
<b>Life-Related</b>	3	499	19,63	4,40	20,00	5,00	28,00	p=0,511
	4	429	19,76	3,96	20,00	4,00	28,00	
<b>Coexistence of Teaching and Evaluation</b>	3	499	18,84	4,23	19,00	4,00	28,00	p=0,268
	4	429	18,99	3,98	19,00	4,00	28,00	
<b>Giving Different Perspectives</b>	3	499	24,91	5,61	25,00	6,00	73,00	p=0,675
	4	429	24,56	4,59	25,00	8,00	35,00	

When Table 4 is examined; the differences between the total and sub-dimensions scores of the physical education and sport teacher candidates included in the survey according to the grade level were not found to be significant ( $p > 0.05$ ).

### Discussion and Conclusion

It is evaluated in this study that, the constructivist learning environment of the candidates studying at 3rd and 4th grades of the physical education and sports teacher training programs from 17 different universities of Turkey according to some variables.

The subscale and total scores of the physical education and sport teacher candidates participating in the research were compared according to age groups and the difference between the ages in terms of the "cooperative" subscale was significant ( $p < 0.05$ ). This difference; Between 20 and 21 years of age and between 21 and >22 years of age ( $p < 0.05$ ). Demirtas, Oguz, Uredi and Akbasli (2015) stated that in evaluating the constructivist learning environments of the age variable in a group of 306 people, it did not show any significant difference in their study.

In this study, statistically significant differences were found between total and subscale average scores of constructivist learning environments according to gender of physical education and sport teacher candidates ( $p < 0.05$ ). Constructive learning perceptions of female teacher candidates were found to be higher than constructive learning conception of

male teacher candidates. That's why the female teachers being more rigorous courses in media-events, joining more classes conducted by lecturers, assisted and informed by active learning can be expressed as a learning experience as they exhibit. Ardic (2015) found statistically significant differences in the comparisons of subscale scores according to gender variables in the study of secondary school students' views on constructivist learning environments. The difference is in favor of female students. Atila, Yasar, Yildirm and Sozbilir (2015) investigated their perceptions of the constructivist learning environments of the students; it is seen that there is a meaningful difference in favor of female students in terms of gender. The results of this research supports our research. When the literature was examined, no difference was found in some studies. These are; Nayman (2011) reported that the constructor learning environment scale, discussions, and interview subscale scores did not make a significant difference in terms of gender variation in the study. Another study by Bas (2012), however, found no significant differences in the perceptions of students regarding the constructivist learning environment in terms of gender variation. In addition, Pinar and Doganay (2009) stated that constructivist learning environments in their research did not cause a statistically significant difference in the mean of the total points compared to the gender.

The total and subscale average scores of the constructivist learning environment scale were compared according to the classes of the physical education and sport teacher candidates in the study and no significant differences were found between them ( $p > 0.05$ ). Among the reasons why the average scores do not significantly differ according to the class variable; It can be said that the instructors conducting the courses in the 3rd grade pass the lessons without adequately assimilating the constructivist approach and thus the students are studying in environments where the constructivist approach is not suitable. Also, one of the reasons for the low overall average of the points that the 4th grade students get from the Constructivist Learning Environment Scale can be thought of as the intensive program due to the preparations for the entrance exam for the profession and also for constructive teaching activities taking long time. In addition, the problems faced by the faculty members from the systems of existing universities, lack of equipment and materials, crowded classes, physical and economic problems of schools, it can be said that they do not fully reflect the constructivist learning approach to their classes because of the reasons.

Researchs are naturally related to their learning outcomes, largely from the fact that the learning environment perceived by the students is largely based on the fact that they are fighting against the learning environment of large-scale learners (Brekelmans et al, 1997; Segers, Dochy, 2001, Gijbels, Watering, Dochy, Bossche, 2006). Altun and Buyukduman, (2007) found that constructivist teaching design practice has a generally positive effect on students and teachers. However, it has been observed that the design of the teaching environment, which is organized according to the principles of the constructivist learning approach which is focused on learning, is pointing to the negativities in some students. Atasay and Akdeniz (2006), stated that; high school students generally adopted the constructivist approach and that they were more successful in the constructivist approach than the courses taught by traditional methods in their research. But, they have to prepare for university entrance examinations and have indicated that teachers do not take this path because the program is intensive and constructive activities take a long time. Demirtas, Oguz, Oredi and Akbasli (2015) couldn't find any significant differences in the research they conducted to determine whether the class level variable produced a meaningful difference in evaluating constructivist learning environments. The difference between the averages of the high school students' classes in the Ardic (2015)'s study was found to be statistically significant. The difference is in favor of 11th grade students. In the research of Atila, Yasar, Yildirim and Sozbilir (2015) primary school students' perceptions of constructivist learning environment according to their class levels, a significant difference was found between subscale scores and class levels, this difference was in favor of the 6th grade.

As a result, in the study that the constructivist learning environments of the teacher candidates in the 3rd and 4th grades of 17 different universities were examined in terms of some variables, while there were no significant differences regarding the presence of physical education and sports teacher candidates in the constructivist learning environment in terms of age and grade level, it has been determined that female teacher candidates have more constructivist learning environment conception than male teacher candidates.

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