Investigation of physical education and sports school students' e-learning styles in terms of some variables

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ABSTRACT

The aim of this study is to examine whether the gender, sports branch, department and class, and class participation of the students studying in the School of Physical Education and Sports undergraduate program differ according to E-learning styles. 340 students (male: 201, female: 139) from Republic of Turkey Mardin Artuklu University Physical Education and Sports School have voluntarily participated in the study in 2020. The "E-learning Styles Scale" developed by Gülbahar and Alper (2014) has been used as data collection tool in the study. As a result, significant differences were found in favor of women in audio-visual learning and autonomous learning for gender variable, in favor of individual sports in audio-visual and autonomous learning for sports type variable, in favor of team sports in social learning. Significant differences were found in favor of I. class students in comparison with II. and III. class students in social learning for the class variable and in favor of students studying at Physical Education and Sports Teaching department compared to Coaching Education and Sports Management in logical learning for department variable. Significant difference was found in favor of the students participating in the synchronous class compared to the students attending the asynchronous and mixed (Sometimes Asynchronous Sometimes Synchronous) class in autonomous learning for class participation variable.

Keywords: E-learning, university student, physical education and sports school.

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INTRODUCTION

The effects of the Covid-19 pandemic, which the whole world is struggling with today, have reflected in the education field of the countries as in every field. With the diagnosis of the first Covid 19 cases and the proliferation, countries announced the pandemic and stopped education for a short time. Educators need to take precautions minimize the negative impacts of this process on the physical and motoric performance as well as education in compulsory conditions like a pandemic (Korkmaz et al., 2020).

The most important factor that ensures the short-term break in education is the improvement and progress in Information and Communication technologies from the beginning to the present. According to Üstün et al. (2020), progress in Information and Communication technologies have created many innovative opportunities that benefit society. The new concept reflected in education from these events is the concept of E-learning. E-learning, in its simplest definition, is a teaching activity

performed by using internet technologies, without the need for the teacher and the student to be in the same physical environment at the same time (Dikbaş, 2006). While teaching activity is performed in E-learning environments, many alternatives such as distance education, synchronous, asynchronous, mixed etc. can be carried out (Perveen, 2016; Bernard et al., 2014; Wu et al., 2012). Among these alternatives, synchronous education is the training performed by the instructor and the student from different locations simultaneously with tools such as virtual classroom, audio and visual conferences. Asynchronous education, on the other hand, is the education enables students to access course materials at any time, asynchronously, and done by recorded course videos published on the web, etc. (Yaylak, 2019; Zhang and Nunamaker, 2003). As in the learning process, in distance education and E-learning environments, the first step of knowing how to learn better and effectively by alternatives such as

synchronous, asynchronous, etc. is to know how the student learns (Kahyaoğlu, 2011). Learning requires a process; and this process is affected by the social, physiological and psychological factors that people are in, and each person shows different characteristics (Yılmaz 2009). Knowing the student's own personal characteristics, perceiving the environment, cognitive, affective and physiological structure determine the student's learning style. Determining the learning styles of the students who are alone in online learning environments and designing teaching materials convenient for these styles will increase the efficiency of the teaching process (Şahin and Çelik, 2011; Gülbahar and Alper, 2014). In addition, it is important that the inclusion of the learner in the learning process which makes learning more willing and rememberable, transferring the obtained knowledge and skills to his/her life, thinking critically, discovering information, taking responsibility and empathizing are the main goals of today's education system (Eyuboglu and Dalkıran, 2020). For this purpose, answers to the following questions have been sought in the study to reveal how students in the schools such as physical education and sports schools where compulsory distance education are held during the pandemic process, will exhibit E-learning styles and whether or not these styles change according to some variables:

What are the E-learning styles defined by the students?
Do the E-learning styles defined by students differ according to gender?
Do the E-learning styles defined by the students differ according to the departments they study?
Do the E-learning styles defined by the students differ according to the students' individual or team sports?

Do the E-learning styles defined by the students differ according to which class the students are in?
Do the E-learning styles defined by the students differ according to the students' class participation?

METHOD

The research has a descriptive nature and was conducted using a relational survey model. Descriptive scanning model is a research approach that aims to define a past or present situation as fully and carefully as possible (Çepni, 2009; Karasar, 2000). Questionnaire was used as data collection tool in the study. Demographic information and questionnaire questions have been electronically prepared on Google Form due to the Covid 19 pandemic and distributed over the internet by snowball sampling technique. According to this technique, the researcher sent the Google Form link to the class representatives. Participants were reached by sharing the class representatives among each other on WhatsApp groups. All questions in the questionnaire must be filled in. On the Google Form, all participants started to fill out the questionnaire after selecting the option that they declared voluntarily participating in the research.

Research group

Research group in 2020 has been consisted of 340 students from Mardin Artuklu University in the Southeast of Turkey studying in Physical Education and Sports School undergraduate program who were chosen by snowball sampling method (Table 1).

Table 1. Demographic characteristics of the study group.

		f	%
Gender	Male	201	59.1
	Female	139	40.9
Your Sport Branch	Individual Sports	109	32.1
	Team Sports	231	67.9
Program / Department of Education	Coaching Training	177	52.1
	Physical Education and Sports Teaching	62	18.2
	Sports Management	101	29.7
Class	I Class	151	44.4
	II Class	131	38.5
	III Class	58	17.1
How do you usually attend online classes?	Asynchronous (After class time)	78	22.9
	Sometimes Synchronous, Sometimes Asynchronous	207	60.9
	Synchronous (In Class Time)	55	16.2

n = 340.

59.1% of the students participating in the research are male and 40.9% female. 32.1% are engaged in individual sports and 67.9% in team sports. 52.1% are the students studying at the Coaching Education Department. 44.4% of the students are I. class students. 16.2% of the students attend classes synchronously (Table 1).

Data collection tool

The E-learning Styles Scale with 38 items (Cronbach α coefficient = 0.94) and 7 factors whose validity and reliability have been made and developed by Gülbahar and Alper (2014), has been used in the study (Table 2).

Table 2. Sub-dimensions of e-learning styles scale.

Dimensions	Definition
Audio-visual Learning	It refers to the style that seeks details in lessons, likes researching and exploration, prefers to learn by seeing and hearing, likes listening, and prioritizes visuals such as tables, videos, etc.
Verbal Learning	It refers to a style that has more abstract learner characteristics, learns by reading, thinks in detail, expresses himself/herself better by written and spoken expression, has a wide vocabulary, and is interested in social sciences lessons.
Active Learning	It has more concrete learner characteristics, likes learning by doing, likes sports etc. activities, refers to an researching and exploratory style.
Autonomous Learning	It expresses a style that has high learning ability and self-confidence, likes working individually and independently, and takes responsibility.
Logical Learning	Expresses a realistic style that works by planning and loves mathematics.
Social Learning	It refers to the style that the student interacts with his/her friends and teachers, likes group work, participates in activities, participates in simultaneous education and prefers project work.
Intuitive Learning	Refers to the creative style that the student learns by using intuition and emotions.

Source: Gülbahar and Alper (2014), Ergün and Kurnaz (2019) and Özonur et al. (2020).

Data Analysis

The data obtained from Google Form was transferred to Excell program and from Excell program to SPSS 20 package program. The data was checked by using Kolmogorov-Smirnov test and the analysis continued by nonparametric tests since they did not show normal distribution. After performing descriptive statistics such as frequency, percentage, arithmetic mean and standard deviation, Kruskal Wallis and Mann-Whitney-U tests were performed for hypothesis testing.

RESULTS

The arithmetic means and standard deviations of the sub-dimensions of E-Learning scale have been determined as; x̄ = 4.10 ± 0.50 for Audio-Visual Learning, x̄ = 3.51 ± 0.64 for Verbal Learning, x̄ = 3.37 ± 0.62 for Active Learning, x̄ = 3.41 ± 0.74 for Autonomous Learning, x̄ = 3.01 ± 1.00 for Logical Learning, x̄ = 3.73 ± 0.74 for Social Learning, and x̄ = 3.51± 0.64 for Intuitive Learning. General C. Alpha coefficient for the scale is = 0.847.

Statistically significant difference was found among the gender groups for the Audio-Visual Learning and Active Learning sub-dimensions ($p < 0.05$). This difference is significantly higher in favor of women in both sub-dimensions. There is no significant difference between gender groups and other sub-dimensions (Table 3).

Among the sports type groups of the participants, a statistically significant difference was found for the sub-dimensions of E-learning scale such as audio-visual learning, active learning and social learning ($p < 0.05$). This difference is higher at audio-visual learning and active learning sub-dimensions for individual sports participants, and at social learning sub-dimension for those who do team sports (Table 4).

Table 5 shows the results of the Kruskal-Wallis test for the sub-dimensions of E-learning scale and score points on the basis of class groups. According to the test results, a statistically significant difference was found among class groups for active learning and social learning levels of E-learning scale ($p < 0.05$). According to the analysis made to determine the groups that caused the significant difference, in active learning dimension between I class and III class students the significant

Table 3. Mann-Whitney-U tests between gender variable and sub-dimensions of e-learning scale.

	Gender	x̄ ± SD	Mean Rank	Sum of Rank	z	U	p
Audio-visual Learning	Male	4.01 ± 0.50	153.46	30844.50	-3.856	10543.500	**0.00**
	Female	4.23 ± 0.47	195.15	27125.50			
Verbal Learning	Male	3.55 ± 0.63	168.40	33848.00	-0.476	13547.000	0.63
	Female	3.46 ± 0.66	173.54	24122.00			
Active Learning	Male	3.21 ± 0.56	145.18	29180.50	-5.731	8879.500	**0.00**
	Female	3.62 ± 0.64	207.12	28789.50			
Autonomous Learning	Male	3.44 ± 0.74	172.83	34738.50	-0.528	13501.500	0.59
	Female	3.38 ± 0.73	167.13	23231.50			
Logical Learning	Male	3.07 ± 1.01	176.34	35444.00	-1.323	12796.000	0.18
	Female	2.93 ± 0.99	162.06	22526.00			
Social Learning	Male	3.70 ± 0.73	166.05	33377.00	-1.005	13076.000	0.31
	Female	3.78 ± 0.77	176.93	24593.00			
Intuitive Learning	Male	3.55 ± 0.63	176.06	35388.00	-1.263	12852.000	0.20
	Female	3.46 ± 0.66	162.46	22582.00			

p < 0.05. n = 340 (Male = 201, Female = 139).

Table 4. Mann-Whitney-U tests between the individual and team sports variable and the sub-dimensions of e-learning scale.

	Sport Branch	x̄ ± SD	Mean Rank	Sum of Rank	z	U	p
Audio-visual Learning	Individual Sports	4.19 ± 0.48	188.14	20507.50	-2.280	10666.500	**0.02**
	Team Sports	4.06 ± 0.50	162.18	37462.50			
Verbal Learning	Individual Sports	3.50 ± 0.73	169.08	18430.00	-0.183	12435.000	0.85
	Team Sports	3.52 ± 0.60	171.17	39540.00			
Active Learning	Individual Sports	3.49 ± 0.63	186.11	20286.50	-2.019	10887.500	**0.04**
	Team Sports	3.32 ± 0.61	163.13	37683.50			
Autonomous Learning	Individual Sports	3.37 ± 0.78	164.06	17883.00	-0.528	13501.500	0.59
	Team Sports	3.44 ± 0.72	173.54	40087.00			
Logical Learning	Individual Sports	3.12 ± 1.09	181.43	19775.50	-1.323	12796.000	0.18
	Team Sports	2.95 ± 0.96	165.34	38194.50			
Social Learning	Individual Sports	3.59 ± 0.83	153.45	16726.50	-2.202	10731.500	**0.03**
	Team Sports	3.79 ± 0.69	178.54	41243.50			
Intuitive Learning	Individual Sports	3.50 ± 0.73	167.83	18293.50	-0.346	12298.500	0.73
	Team Sports	3.52 ± 0.60	171.76	39676.50			

p < 0.05. n = 340 (Individual Sports =109, Team Sports = 231).

difference was in favor of I class students; between II class and III class students it was in favor of II class students; and in the social learning dimension between I class students and II and III class students it was in favor

Table 5. Kruskal-Wallis tests among the class of education variable and sub-dimensions of e-learning scale.

	Class	x̄ ± SD	Mean Rank	df	Chi-Square	p	Significant Difference
Audio-visual Learning	I.Class (A)	4.14 ± 0.46	178.00	2	2.792	0.24	-
	II.Class (B)	4.08 ± 0.55	169.71				
	III.Class (C)	4.01 ± 0.47	152.76				
Verbal Learning	I.Class (A)	3.48 ± 0.67	168.59	2	0.533	0.76	-
	II.Class (B)	3.54 ± 0.62	175.13				
	III.Class (C)	3.54 ± 0.60	165.01				
Active Learning	I.Class (A)	3.41 ± 0.60	175.15	2	8.315	**0.01**	**A>C, B>C**
	II.Class (B)	3.42 ± 0.66	179.94				
	III.Class (C)	3.17 ± 0.54	137.06				
Autonomous Learning	I.Class (A)	3.38 ± 0.70	166.77	2	1.026	0.59	-
	II.Class (B)	3.42 ± 0.74	169.73				
	III.Class (C)	3.50 ± 0.82	181.97				
Logical Learning	I.Class (A)	2.92 ± 0.96	162.62	2	1.872	0.39	-
	II.Class (B)	3.06 ± 1.07	175.24				
	III.Class (C)	3.10 ± 0.95	180.32				
Social Learning	I.Class (A)	3.90 ± 0.66	192.73	2	14.968	**0.00**	**A>B, A>C**
	II.Class (B)	3.63 ± 0.77	157.52				
	III.Class (C)	3.50 ± 0.79	141.95				
Intuitive Learning	I.Class (A)	3.48 ± 0.67	166.99	2	0.369	0.83	-
	II.Class (B)	3.54 ± 0.62	173.95				
	III.Class (C)	3.54 ± 0.60	171.84				

$p < 0.05$. n = 340 (A = 151, B = 131, C = 58).

of I class students.

According to Table 6, a statistically significant difference was found for the education department and sub-dimensions of E-learning scale such as active, autonomous and logical learning levels ($p < 0.05$). In the active learning sub-dimension; the difference between Coaching Education and Physical Education and Sports Teaching students was in favor of Physical Education and Sports Teaching students, and between Sports Management and Coaching Education students the difference was in favor of Management students. As a result of studying the significant differences in the logical learning sub-dimension; it has been determined that the scores of the students studying in Physical Education and Sports Teaching are higher than the students studying in other departments.

According to Table 7, a statistically significant difference was found for students' participation in the class and the audio-visual, active, autonomous and social learning levels of E-learning scale ($p < 0.05$). As a result of studying the significant differences in independent learning sub-dimension; it was determined that the scores of the students participating in synchronous (during the lesson time) education were higher than the students' participation scores of asynchronous (outside the lesson hours) and mixed (sometimes synchronous, sometimes asynchronous).

DISCUSSION AND CONCLUSION

The results of this study, which was conducted in order to determine E-learning styles of students studying in the undergraduate program of the School of Physical Education and Sports, and to examine whether their learning styles differ according to gender, sports branch, department and class, and the mode of participation in the lesson, are presented as below by correlating with other studies made in this literature.

In order to study at sports education undergraduate programs of universities, it is carried out by a central placement or special talent exam (YKS, 2020).

Table 6. Kruskal-Wallis tests between the department of education and sub-dimensions of e-learning scale.

	Department	x̄ ± SD	Mean Rank	df	Chi-Square	p	Significant Difference
Audio-visual Learning	Coaching Training (D)	4.10 ± 0.46	168.68				
	Physical Education and Sports Teaching (E)	4.08 ± 0.53	167.60	2	0.376	0.83	-
	Sports Management (F)	4.11 ± 0.55	175.48				
Verbal Learning	Coaching Training (D)	3.49 ± 0.62	168.47				
	Physical Education and Sports Teaching (E)	3.56 ± 0.63	171.57	2	0.173	0.92	-
	Sports Management (F)	3.52 ± 0.68	173.40				
Active Learning	Coaching Training (D)	3.28 ± 0.59	155.26				
	Physical Education and Sports Teaching (E)	3.45 ± 0.61	183.49	2	9.070	**0.01**	**E>D, F>D,**
	Sports Management (F)	3.50 ± 0.65	189.24				
Autonomous Learning	Coaching Training (D)	3.46 ± 0.72	177.34				
	Physical Education and Sports Teaching (E)	3.52 ± 0.71	185.91	2	7.265	**0.03**	**D>F, E>F**
	Sports Management (F)	3.26 ± 0.77	149.06				
Logical Learning	Coaching Training (D)	2.98 ± 0.93	168.36				
	Physical Education and Sports Teaching (E)	3.46 ± 1.13	210.06	2	14.670	**0.00**	**E>D, E>F**
	Sports Management (F)	2.78 ± 0.97	149.98				
Social Learning	Coaching Training (D)	3.72 ± 0.07	169.84				
	Physical Education and Sports Teaching (E)	3.73 ± 0.70	170.77	2	0.019	0.99	-
	Sports Management (F)	3.73 ± 0.74	171.49				
Intuitive Learning	Coaching Training (D)	3.49 ± 0.62	168.47				
	Physical Education and Sports Teaching (E)	3.56 ± 0.63	171.57	2	0.173	0.91	-
	Sports Management (F)	3.52 ± 0.68	173.40				

P < 0.05. n = 340 (D = 177, E = 62, F = 101).

Regardless of whether it is a central or special talent examination method, the students who win the sports school have lower central placement scores than other undergraduate education programs (YÖK Undergraduate Atlas, 2020). According to Parlakkılıç (2017), students who want to receive sports education in the undergraduate program of universities are required to take the central placement exam held every year and get a high score. In the study, it is seen that Physical Education and Sports School Students with Audio-visual Learning style have the highest average as x̄ = 4.10 ± 0.50 and the students with Logical Learning style have the lowest average as x̄ = 3.01 ± 1.00. The sample group on which the research was applied has been taken by the university-specific talent examination system. Therefore, it can be said that

Table 7. Kruskal-Wallis tests between students' online class attendance and sub-dimensions of e-learning scale.

	Class Attendance Status	x̄ ± SD	Mean Rank	df	Chi-Square	p	Significant Difference
Audio-visual Learning	Asynchronous (X)	3.90 ± 0.53	134.90				Y>X,
	Mixed (Y)	4.14 ± 0.47	178.43	2	14.081	**0.00**	Z>X
	Synchronous (Z)	4.21 ± 0.48	191.15				
Verbal Learning	Asynchronous (X)	3.51 ± 0.63	171.55				
	Mixed (Y)	3.55 ± 0.64	175.15	2	2.565	0.27	-
	Synchronous (Z)	3.37 ± 0.65	151.49				
Active Learning	Asynchronous (X)	3.15 ± 0.64	135.12				
	Mixed (Y)	3.46 ± 0.58	184.75	2	14.624	**0.00**	Y>X
	Synchronous (Z)	3.36 ± 0.70	167.05				
Autonomous Learning	Asynchronous (X)	3.25 ± 0.73	145.99				Z>Y,
	Mixed (Y)	3.41 ± 0.70	170.58	2	11.737	**0.00**	Z>X
	Synchronous (Z)	3.69 ± 0.82	204.95				
Logical Learning	Asynchronous (X)	2.87 ± 0.98	157.33				
	Mixed (Y)	3.04 ± 1.01	173.62	2	1.901	0.38	**-**
	Synchronous (Z)	3.06 ± 1.00	177.43				
Social Learning	Asynchronous (X)	3.30 ± 0.74	116.49				Y>X,
	Mixed (Y)	3.83 ± 0.66	184.02	2	31.381	**0.00**	Z>X
	Synchronous (Z)	3.93 ± 0.81	196.21				
Intuitive Learning	Asynchronous (X)	3.51 ± 0.63	171.55				
	Mixed (Y)	3.55 ± 0.64	175.15	2	2.565	0.27	-
	Synchronous (Z)	3.37 ± 0.65	151.49				

p < 0.05. n = 340 (X = 78, Y = 207, Z = 55).

in the Schools of Physical Education and Sports which require special skills in the learning styles defined by the students, the student's school preference with the method of student admission to the college and students' school choice, the Audio-Visual learning style is much more at the forefront and effective than the Logical Learning style.

According to Özder et al. (2010), women achieved higher academic success than men in terms of cognitive goals. According to National Education Statistics Database of Turkey Statistical Institute and 2018 Household Labor Force Survey report; it has been stated that the literacy rate for 25 years and over of population as 1.3% male, 7.6% female is illiterate, and the population graduated from undergraduate programs is as 22.4% male, 17.5% female, and the employment

rate for 15 years and over has been reported as 65.7% male and 29.4% female (TÜİK, 2020). In the study, the audio-visual learning and active learning styles of women differ from men in terms of gender (Table 3). This difference can be explained by women's desire to achieve cognitive goals and provide social equality in terms of academic success, education and employment.

According to Table 4, team sports students show more social learning styles than individual sports students and individual sports students show more audio-visual learning and active learning styles than team sports students. There are studies in the literature in respect to the fact that socialization skill does not vary according to team and individual sports (Çepikkurt and Fındık, 2017), as well as studies reporting that socialization skills are higher in team sports students (Açak and Taşçı, 2019). Ensuring the success of team sports (Basketball, Football, etc.) depends on the integrity of all athletes in every respect. In order to gain the athletes special features such as communicating in the game, anticipating what each other can do while exchanging passes, warning each other by special verbal or physical signs, etc. the coaches should provide social environments for athletes apart from trainings. In individual sports (Wrestling, Boxing, etc.) one of the basic conditions for achieving success is that the athlete can compete with himself/herself by constantly improving his/her performance. Accordingly, it can be said that the difference among the learning styles defined by the students stems from the nature of the team or individual sports type they choose.

According to Table 5, I. and II. class students show more active learning styles than III. class students, and I. class students show more social learning styles than II. and III. class students. In 2019-2020 academic year spring semester, the academic year was completed with distance education by transitioning compulsorily from formal education to distance education (YÖK, 2020a). The 2020-2021 academic year has started in October of the fall semester. In this case, I. class students, who are the subject of the study, registered in 2021 and never met formal education. II. class students that received a little much than one semester of formal education last year, still continue their distance education. III. class students, on the other hand, received a little much than three semesters of formal education and met distance education. In this case it can be said that this situation may be effective in defining students' learning styles and differing among classes.

According to Table 6, it is understood that Physical Education and Sports Teaching and Sports Management students show much active learning styles than the students of Coaching Education departments, and the students of Coaching Education and Physical Education and Sports Teaching departments show much autonomous learning styles and the students of Physical Education and Sports Teaching departments show much

logical learning styles than the students of Coaching Education and Sports Management departments. The attitudes of the students studying at Physical Education and Sports Teaching, Coaching Education and Sports Management departments of the universities that switched from formal education to distance education due to Covid 19 showed statistically significant difference (Aktaş et al., 2020).

It has been revealed that some sub-dimensions of E-learning styles scale differ according to the programs by which the students study in different programs of the universities (Özonur et al., 2020). the factors such as university entrance exam methods, central placement exam scores, scores from special talent exams, national athlete status etc. for students who receive sports education have been changed. These scores affect the departments at which the students will be placed and their academic motivation and success in departments as well (Peker, 2003; Pehlevan, 2019; Eroğlu et al. 2019). The courses of the preferred or gained departments also vary according to the aims of the department (MAU, 2020). In these premises, it can be said that the reason of the differentiation in the definition of students learning styles according to the departments they study is due to the students department preferences.

According to Table 7, students participating in mixed and synchronous classes show much audio-visual learning styles compared to students participating in asynchronous classes; students participating in mixed classes show much active learning styles than the students participating in asynchronous classes; the students participating in synchronous classes show much autonomous learning styles than the students participating in mixed and asynchronous classes; and the students of mixed and synchronous classes show much social learning styles in comparison with the students participating in the asynchronous classes.

According to Yorgancı (2015), synchronous education is the educational environments that the advantages of face-to-face education in which mutual interaction is experienced through various programs during the lesson where students and teachers are in different places, can be partially used. Asynchronous education is the educational environments where the student tries to learn the course materials previously shared independently by the instructor. In the process of Covid 19 pandemic, the universities have provided the opportunity to the students to attend classes synchronously or asynchronously by considering internet access difficulty for distance education environment, internet quota shortage and the necessity of computers, mobile phones etc. (YÖK, 2020b).

In the analyses made in the study, the differences in the learning sub-dimensions are in favor of participating in synchronous and mixed lessons compared to asynchronous class participation. This may be due to the fact that students attend the classes synchronously,

mixed and asynchronously, and some of the courses of Physical Education and Sports School are applied courses.

Consequently, the students of Physical Education and Sports School mostly defined the Audio-Visual Learning style. Some sub-dimensions of E-learning styles varied according to gender, branch of sports, department of education, class and class participation style variables.

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