



# Self-evaluated teacher effectiveness in physical education and sports during schools closedown and emergency distance learning

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## Abstract

This quantitative study scrutinized the self-assessment of Physical Education and Sport teachers about their online physical education (PE) classes, which stemmed from the closure of schools and mandatory distance education during the COVID-19 outbreak. The data collecting tools of the study were the "Evaluation of Teacher Effectiveness Questionnaire in Physical Education (SETEQ-PE)" developed by Kyrgiridis et al. (2014) and adapted to the Turkish Ektirici et al. (2016). The participants were composed of 172 volunteer physical education and sports teachers who were determined via convenience sampling model. The data collected covered such demographic information as age, gender, sports-type, teaching, and schoolwork experience besides the items related to distance education, hardware support, proficiency in technological infrastructure, and application/software. The findings of the study showed that certain variables such as technological competencies, technical support provided by the school, and application/software support were influential in the participant physical education teachers' self-assessment. In addition, it was found out that SETEQ-PE variables such as technological competencies, technical support provided by the school, and application/software support affected to PE and sports teachers' self-assessment responses. However, no significant differences were determined in SETEQ-PE results about synchronous or asynchronous implementation of the physical education lessons, gender, and age.

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**Keywords:** Teacher effectiveness; distance learning; physical education, COVID-19.

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## 1. Introduction

Owing to the suspension of education, the COVID-10 outbreak, which has suddenly brought life to a standstill worldwide, has adversely affected education. The academic life of millions of students has been disrupted because of the schools' long-term closure (Education International, 2020; Özer, 2020). The educational institutions have therefore tried to preserve the permanence of education through distance education, during which synchronous or asynchronous online learning platforms, web-based, cloud-based or technology-based learning applications were commonly used (Means, Toyama, Murphy, & Bakia, 2013). Compared to face-to - face education, distance education involves some advantages and challenges due to systemic differences (Mohnsen, 2012; Bilgic, & Tuzun, 2020; de Oliveira, Penedo, & Pereira 2018).

Most private schools have decided to use synchronous sessions via online platforms provided by companies such as Google and Microsoft. Teachers have to be confronted with this fast-digital transition and required the transform their teaching methods throughout the network-based education. In this adaptation period, it is expected there might occur some limitations, especially since such an applied and socially active lesson are physical education and sports.

Before this pandemic emergency condition, online physical education classes (OLPE) are fast becoming a key instrument in preventing from obesity and delivering PE lessons to students who have geographical and financial problems, especially in United States (Daum & Buschner, 2012; Killian, Kinder, & Mays Woods, 2019; Mohnsen, 2012). Previous OLPE research the relationship between course material, teaching methods, and implementation and student results (Mosier, 2010; Goad, 2018). In addition, student perceptions, interests, and achievements in different distance education (blended or hybrid) on physical education lessons were also prominent research topics (Williams, Martinasek, Carone, Sanders, 2020).

However, there are serious problems such as the delivery via OLPE, evaluation, and assessment procedures of teaching and course outcomes (Bushner, 2006; Kooiman, Sheehan, Wesolek & Retegui 2017). It is assumed that both the education system and its stakeholders (e.g., schools, teachers) were not adequately prepared for such an urgent transition to distance education, and in fact, those practices reflected the features of remote teaching (Bozkurt & Sharma, 2020). Expectedly, the difficulties that physical education teachers may encounter during distance education influence the quality of education.

### *1.1. State hypotheses and their correspondence to research design*

Self-evaluation, used in the assessment of teachers, allows teachers to assess the competence and efficacy of their teaching and make the decisions to better themselves (Keller & Duffy, 2005). Previous studies have disclosed specifics about physical education

and set up a system that can help teachers measure their effectiveness and appreciation and develop their work (Harris, 1999). The evaluation of both teacher-student interaction was an indicator of social aspect and quality of technical knowledge of the teacher on the teaching content needed to measure and interpret. Regarding physical education teacher effectiveness in recent study developed that Self-Evaluated Teacher Effectiveness Questionnaire (Kyrgiridis, Derri, Emmanouilidou, Chlapoutaki & Kioumourtzoglou, 2014).

Once, teachers' self-assessment is essential for the quality of the course in education. It would be beneficial to the evaluation of physical education teachers during the pandemic related outbreak of education, maintained remote teaching and online courses. Therefore, this study aimed to describe the self-assessment in online physical education lessons, which stemmed from the closure of schools and mandatory distance education during the COVID-19 outbreak.

## **2. Method**

The study adopted the quantitative research design. In quantitative research your aim is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. Quantitative research designs are either descriptive (subjects usually measured once) or experimental (subjects measured before and after a treatment). A descriptive study establishes only associations between variables (Hopkins, 2000).

### *2.1. Participants*

The participants of the study consisted of 172 volunteer (61 females and 111 males) physical education and sports teachers in Turkey who delivered blended physical education lessons because of the COVID-19 outbreak. The participant teachers, who pursued their PE lessons online during the COVID-19 pandemic, were invited to fill in a valid self-evaluation questionnaire.

### *2.2. Sampling procedures*

Since the exact number of the schools that provided distance physical education and sports lessons was not precise, in the study the convenience sampling model was utilized (Lavrakas, 2008) to determine the participant profile. The participant teachers took part in the study on voluntary basis. The SETEQ-PE was turned into online using Google forms and sent to the relevant participant groups. The scale was announced and suspended during July 2020. One hundred seventy-two physical education and sports teachers who completed the questionnaire were included in the study sample.

### 2.3. *Collecting the Data*

The data collecting tools comprised the "Evaluation of Teacher Effectiveness Questionnaire in Physical Education (SETEQ-PE)" developed by Kyrgiridis et al. It is a 7-point Likert-type questionnaire consisting of 25 items and six sub-dimensions (Kyrgiridis et.al. 2014). Following the adaptation studies of the tool (i.e., cross-language equivalence, content, and construct validity) and the explanatory factor analysis results, five items were removed, and the Turkish version included 21 items and six sub-dimensions: Learning Environment, Student-Teacher Assessment, Application of Physical Education Content, Use of Technology, Teaching Strategies, and Lesson Implementation. The Cronbach Alpha value was .930 (Ektirici, Çelik, & Yılmaz, 2016).

In the study most of the data were collected via the data collecting tools above, and the participants were addressed some additional questions such as age, gender, sports-type (i.e., individual or team sports), teaching, and schoolwork experience besides the questions about distance education (e.g., synchronous or asynchronous), hardware support, proficiency in technological infrastructure, and application/software.

The participants were divided into two groups; 1. The teachers who delivered asynchronous physical education and sports lessons by sending visual materials and programs to students, 2. The ones who taught synchronously with teacher participation/instruction and student interaction.

### 2.4. *Data Analysis*

In the study all statistical analyses were performed via SPSS-25 (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY). The significance level was set at  $p < 0.05$ . The data were normality tested using Skewness and Kurtosis. The parameters with values between -1.5 and +1.5 were considered normal distribution (Tabachnick & Fidell, 2013). The self-assessment questionnaire results for physical education teachers were addressed in six dimensions and total score. The results were compared with the t-test by certain variables such as gender, sports type, synchronous or asynchronous distance education, the provision of technical support and technological requirements, and the usage of an application/software. In the current study, physical education and sports teachers were grouped by age, experience: inexperienced (0-5 years), less experienced (6-10 years), experienced (11-15 years), and very experienced (16 years and over), and by the employment period at the same school: short term (0-5 years), mid-term (6-10), and long term (11 years and above). The SETEQ-PE results analyzed by using the analysis of variance. We measured significance between groups using the Bonferroni post hoc test.

### 3. Results

The results based on the data analysis can be stated and illustrated as in the following.

Figure 1 presents the information about the participants, schools, education status during distance education with a pie chart. In the study, 71.51% of teachers who made self-assessment on SETEQ-PE delivered the lessons synchronously, 36.84% were team athletes, and 63.16% engaged in individual sports. The majority of the participant physical education teachers received technical support, and 2/3 had adequate technological resources. The rate of application/software users was 73.26% (Figure 1).

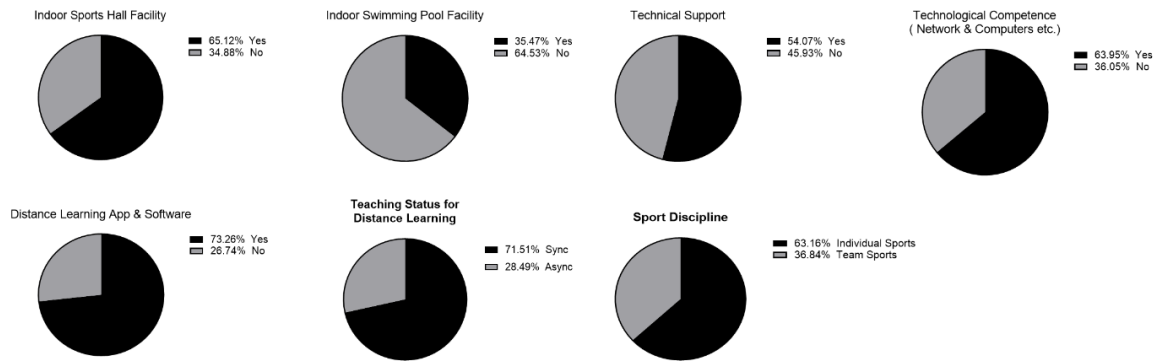


Figure 1 Distribution of the resources or supporting status of the participants during the emergency remote teaching

#### 3.1. Statistics and data analysis

Table 1 below shows the mean and standard deviation for a total score for The Evaluation of Teacher Effectiveness Questionnaire in Physical Education and six sub-dimensions (i.e., Learning Environment, Student-Teacher Assessment, Application of Physical Education Content, Use of Technology, Teaching Strategies, and Lesson Implementation). As seen in Table 1, there was no statistically significant difference in SETEQ-PE by gender.

When the results tested by sports type, we found that student-teacher assessment, the use of technology, and lesson implementation results were similar. Besides, the scores of physical education teachers who did team sports (TS), in learning environment, application of physical education content, and teaching strategies sub-dimensions were statistically lower than those who engaged in individual sports (IS) (Table 1). There was no significant difference in SETEQ-PE results by the synchronous or asynchronous implementation of physical education lessons. As shown in Table 1, the provision of technical support by school management was statistically significant only in student-

teacher assessment and total scores. The learning environment, student-teacher assessment, technology use, and total scores were significantly low among the participant physical education teachers who reported having insufficient technological opportunities. Besides, the learning environment, student-teacher assessment, and total scores of teachers who utilized an application or software during distance education were statistically higher than those who did not use them (Table 1).



Table 1PETE-SQ results according to gender, sports discipline, DL status, tech support from school, tech competence and DL app & software usage.

PETE-SQ sub-topics	Sex				Sports Discipline			Distance Learning Status			Tech Support from School			Technological Competence (Network & Computers etc.)			DL App & Software Usage		
	Females (n=61)	Males (n=111)	Both Sexes (n=172)	P value	Individual sports (n=108)	Team sports (n=63)	P value	Asynchrony PE (n=49)	Synchron PE (n=123)	P value	Non-supported	Supported	P value	Incompetent (n=62)	Competent (n=110)	P value	Yes, used (n=126)	No, not used (n=46)	P value
Learning Environment	3.98 ± .78	4.19 ± .68	4.12 ± .72	.079	4.23 ± .67	3.93 ± .79	.010	4.15 ± .75	4.11 ± .72	.738	4.02 ± .79	4.20 ± .66	.099	3.97 ± .81	4.21 ± .66	.038	3.89 ± .81	4.20 ± .68	.012
Student and Teacher Assessment	3.54 ± .87	3.77 ± .87	3.69 ± .87	.099	3.79 ± .88	3.55 ± .86	.087	3.49 ± .87	3.77 ± .87	.055	3.49 ± .89	3.86 ± .84	.006	3.40 ± .91	3.86 ± .82	.001	3.34 ± .80	3.82 ± .87	.001
Application of The Content of Physical Education	4.20 ± .95	4.29 ± .71	4.26 ± .80	.503	4.39 ± .77	4.07 ± .84	.013	4.23 ± .59	4.28 ± .88	.742	4.22 ± .66	4.30 ± .91	.510	4.13 ± .79	4.34 ± .81	.101	4.12 ± .64	4.31 ± .86	.169
Use of Technology	4.06 ± .80	4.18 ± .65	4.14 ± .71	.292	4.19 ± .72	4.09 ± .69	.391	4.14 ± .55	4.14 ± .77	.985	4.03 ± .63	4.24 ± .77	.054	4.00 ± .76	4.23 ± .67	.042	3.97 ± .68	4.21 ± .72	.058
Teaching Strategies	4.13 ± .79	4.21 ± .72	4.19 ± .74	.511	4.30 ± .71	4.00 ± .79	.012	4.23 ± .65	4.17 ± .79	.622	4.15 ± .64	4.22 ± .83	.538	4.13 ± .69	4.22 ± .78	.423	4.14 ± .63	4.21 ± .79	.606
Lesson Implementation	4.65 ± .44	4.63 ± .57	4.64 ± .53	.859	4.66 ± .58	4.60 ± .44	.421	4.52 ± .56	4.69 ± .52	.070	4.58 ± .46	4.69 ± .59	.158	4.55 ± .64	4.69 ± .45	.089	4.56 ± .47	4.67 ± .55	.221
Total Score	8.469 ± 13.38	8.703 ± 12.85	8.617 ± 13.05	.275	8.826 ± 12.82	8.242 ± 12.80	.007	8.480 ± 11.96	8.671 ± 13.48	.406	8.385 ± 12.28	8.822 ± 13.45	.034	8.249 ± 13.82	8.833 ± 12.15	.006	8.181 ± 12.10	8.778 ± 13.08	.010



There was no difference in SETEQ-PE sub-dimensions and total score by age. However, when the groups were compared by the professional experience, a significant difference was found in the learning environment and application of physical education content sub-dimensions and total score (respectively [ $F(3, 168) = 4.58, p = 0.004$ ]; [ $F(3, 168) = 2.88, p = 0.037$ ] and [ $F(3, 156) = 2.63, p = 0.052$ ]). However, there was no difference in other sub-dimensions (Table 2). A significant difference was found between the groups in the sub-dimensions of learning environment and teaching strategies by the employment period at the same school (respectively [ $F(2, 169) = 4.48, p = 0.013$ ] and [ $F(2, 169) = 4.52, p = 0.075$ ]). As shown in Table 2, the mid-term employed group scores were significantly higher than the long-term employed physical education teachers ( $p = 0.010$ ). The short-term employed teachers had significantly higher scores than the mid-term group by the lesson implementation factor ( $p = 0.010$ ).



Table 2 Variance analysis of the sub-topics and total score of the PETE-SQ between teaching experience at same school or PE teaching experience.

Variance analysis of teaching experience at the same school					
Dependent Variable			Mean Difference (I-J)	Std. Error	Si g.
<b>Learning Environment</b>	Short-term	Mid-term	0.14599	0.124 59	0. 729
		Long-term	-0.31961	0.144 45	0. 085
	Mid-term	Short-term	-0.14599	0.124 59	0. 729
		Long-term	-.46559*	0.156 41	0. 010
	Long-term	Short-term	0.31961	0.144 45	0. 085
		Mid-term	.46559*	0.156 41	0. 010
<b>Lesson Implementation</b>	Short-term	Mid-term	.27381*	0.091 52	0. 010
		Long-term	0.07255	0.106 11	1. 000
	Mid-term	Short-term	-.27381*	0.091 52	0. 010
		Long-term	-0.20126	0.114 90	0. 245
	Long-term	Short-term	-0.07255	0.106 11	1. 000
		Mid-term	0.20126	0.114 90	0. 245
Variance analysis of PE teaching experience					
Dependent Variable			Mean Difference (I-J)	Std. Error	Si g.
<b>Learning Environment</b>	Inexperienced	Less-experienced	.54350*	0.176 18	0. 014
		Experienced	-0.00489	0.176 18	1. 000
		Very-experienced	0.05628	0.146 55	1. 000
	Less-experienced	Inexperienced	-.54350*	0.176 18	0. 014
		Experienced	-.54839*	0.178 91	0. 015
		Very-experienced	-.48722*	0.149 83	0. 008
	Experienced	Inexperienced	0.00489	0.176 18	1. 000
		Less-experienced	.54839*	0.178 91	0. 015
		Very-experienced	0.06116	0.149 83	1. 000
	Very-experienced	Inexperienced	-0.05628	0.146 55	1. 000
		Less-experienced	.48722*	0.149 83	0. 008
		Experienced	-0.06116	0.149	1.

				83	000
<b>Application of The Content of Physical Education</b>	Inexperienced	Less-experienced	.55816*	0.198	0.034
		Experienced	0.13881	0.198	1.000
		Very-experienced	0.28139	0.165	0.544
	Less-experienced	Inexperienced	-.55816*	0.198	0.034
		Experienced	-0.41935	0.201	0.236
		Very-experienced	-0.27678	0.169	0.621
	Experienced	Inexperienced	-0.13881	0.198	1.000
		Less-experienced	0.41935	0.201	0.236
		Very-experienced	0.14258	0.169	1.000
	Very-experienced	Inexperienced	-0.28139	0.165	0.544
		Less-experienced	0.27678	0.169	0.621
		Experienced	-0.14258	0.169	1.000
<b>Total Score</b>	Inexperienced	Less-experienced	9.16820*	3.352	0.042
		Experienced	2.51057	3.322	1.000
		Very-experienced	4.13844	2.762	0.817
	Less-experienced	Inexperienced	-9.16820*	3.352	0.042
		Experienced	-6.65764	3.407	0.315
		Very-experienced	-5.02976	2.864	0.486
	Experienced	Inexperienced	-2.51057	3.322	1.000
		Less-experienced	6.65764	3.407	0.315
		Very-experienced	1.62787	2.828	1.000
	Very-experienced	Inexperienced	-4.13844	2.762	0.817
		Less-experienced	5.02976	2.864	0.486
		Experienced	-1.62787	2.828	1.000

#### 4. Discussion and Conclusion

Focusing on physical education teacher's self-assessment who applied online physical education and sports' lessons with the closure of schools due to the COVID-19 pandemic, the results of the study revealed that SETEQ-PE variables such as technological

competencies, technical support provided by the school, and application/software support affected to PE and sports teachers' self-assessment responses. However, there were no significant differences in SETEQ-PE results accordingly synchronous or asynchronous application of the physical education lessons, gender, and age.

The main finding of this study was the differences in physical education teachers' self-assessment scores by technological competencies, technical support, and assisting application/software use during distance education. The total scores of the SETEQ-PE and learning environment as most important sub-topics were significantly low among the participant physical education teachers who reported having insufficient technological opportunities. The technically supported PE teachers noted that higher teacher effectiveness scores via the current self-reported scale. The learning environment, student-teacher assessment, and overall scores of teachers using distance learning apps were statistically higher than those who did not applied during remote teaching. Although the emerging transition to distance education due to, it can tolerate the outbreak, the technical problems have influenced the self-efficacy during online lessons. Besides, the using applications such as Swork-it kids, 7-minute workout for kids, and GoNoodle kids altered the participant teachers' self-assessment scores. These results emphasized the importance of providing the necessary infrastructure to maintain student and teacher interaction. The potential communication problems between students and teachers who have internet connection problems or unable to fix technical problems, which may reduce student engagement (Casey & Jones, 2011). Besides, the delivery of lessons through traditional methods rather than technology-assisted lessons may reduce the motivation of both students and teachers who lack social interaction. A well-qualified physical education teacher can transfer the knowledge and necessary skills to the student (Siedentop, 2007), but now it also covers the out-of-class environments (Daum & Buschner, 2012). Visualization of the instructions and exercises with digital tools is an innovation for physical education lessons. Using such technology also enriches the course content (Killian, Kinder & Mays Woods, 2019). Moreover, it has been reported that watching short videos during online physical education classes contributes to developing motor skills by correcting student's techniques (Mohnsen, 2012). Considering current study findings and knowledge in the literature, it is suggested that only educational, skills, and experience in a specific sports branch are not sufficient for future physical education teachers. Besides those fundamental qualifications, they should gain the ability to use technology and its instruments to implement and evaluate course materials and the solution to problems.

Another finding was that when the sports type was assessed, a difference was observed among the physical education teachers who engaged in team sports. Although the student-teacher assessment, lesson implementation, and the use of technology sub-factor results were similar, the learning environment, application of physical education content, teaching strategies, and total score parameters were lower in physical education teachers

who engaged in team sports. Those teachers were likely to have a difference in lesson management and implementation. They might prefer to deliver the lesson interactively and determine teaching strategies based on interaction. That explains the difference between team athletes and individual athletes. Since the scores obtained from the learning environment factor was low for physical education teachers who engaged in team sports, it can be suggested that sports expertise plays a role in self-efficacy.

The results obtained from the variance analysis of PE teaching experience and teaching experience at the same school showed a significant difference between groups (Table 2). The Less-experienced PE teachers self-reported that low learning environment scores in comparison to Experienced PE teachers. These findings are in line with previous study by Omare et.al. 2020. They investigated to teacher adaptations to the futures' pedagogies with prediction of teacher qualification and experience. They found that experience level affects the compatibility of teachers to the new directions in education (Omare, Imonjeb, & Nyagah, 2020). Consistently, current results also showed that experience levels of PE teachers report significantly different teacher effectiveness.

Accordingly, employment period at the same school considered another factor to the teacher effectiveness and found that higher scores in mid-term employed group than long-term employed physical education teachers and the short-term employed teachers had significantly higher scores than the mid-term group by the lesson implementation factor. Similarly, it was noted that long-serving teachers may maintain an optimistic professional outlook as they advance in age (Webster, McNeish, Scott, Maynard, & Haywood, 2012). However, they face the challenge of addressing teaching requirements and changing individual situations, such as adapting to variations due to the added responsibility for governance.

The current findings are consistent with that of Bozkurt (2019) who suggested classifying the education implemented following the closure of schools as 'remote teaching' rather than distance education, which is a multidisciplinary field that guides open learning by responding to the needs of the learner (Bozkurt, 2019). However, in remote teaching, the perspective of education and training is almost the same as face-to-face, except for an actual spatial distance between remote teaching school and teacher and student. It might be assumed that as a temporary solution to the teaching crisis stemmed from the unexpected COVID-19 pandemic (Golden, 2020; Bozkurt & Sharma, 2020). Those findings are of great importance to see the adaptation ways of highly qualified teachers. During remote teaching, educators' responsibilities have changed, and certain factors such as the use of technology for online lessons and communication with students have become noteworthy.

Although it was a useful scale for teacher effectiveness, learners' attributes and engagement are inseparable for the success of PE classes. The lack of student evaluations is the limitation of this study. Future studies required to investigate the effectiveness of

distance learning of PE lessons integrated methods for both sides of the education. In the continuous development of the PE and sports teacher from the standpoint of effective preparation, execution, and assessment of the lesson, the SETEQ-PE might provide as a useful guide. In addition, it may be beneficial for all those who interested in the teacher assessment and development process. It is well-known that the closure of schools because of the COVID-19 pandemic crisis has resulted in adverse outcomes in almost every country. The preparation and presentation of various programs focusing on distance learning related topics seem to crucial to support the professional skills of teachers during the period of school closure. Thus, it is vital to be design and integrate well-structured online education programs and offline/remote virtual physical education classes to the curriculum.

To sum up it is safe to state that the SETEQ-PE is a self-assessment tool based on participants' self-perceptions and does not measure what they do. Findings show that certain factors such as technological competence, technical support, and teaching experience can change the SETEQ-PE results. The questionnaire was a good fit for the collecting data physical education teacher effectiveness and results reflected that adequate technological support are important factors in SETEQ-PE, primarily Learning Environment and Use of Technology sub-topics. In the continuous development of the PE and sports teacher from the standpoint of effective preparation, execution, and assessment of the lesson, the SETEQ-PE might provide as a useful guide.

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