

21st century skills in pre-service physical education and sports teacher education in Türkiye: is it sufficient?

Türkiye'de hizmet öncesi beden eğitimi ve spor öğretmeni yetiştirmede 21. yüzyıl becerileri: yeterli mi?

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ABSTRACT

The aim of the research is to investigate pre-service physical education and sports teachers' perceptions of their proficiency in 21st century skills and the level of importance of these skills according to them. A total of 338 volunteer participants, 162 female and 176 male, took part in this study, which was conducted using the descriptive survey model of quantitative research methods. As data collection tools, "Importance of Having 21st Century Skills Scale" and "21st Century Skills Competence Perception Scale", which were developed by Aydın and Tan Şişman (2021), and "Demographic Information Form" were used. Frequency tables, descriptive statistics, skewness-kurtosis analysis, independent samples T-test were applied with SPSS 25. The study's findings revealed that pre-service physical education and sports teachers considered 21st Century skills sufficiently important and perceived themselves as competent in this field. Additionally, no significant difference was found according to gender, grade and cumulative grade point average variables. As a result, it is seen that pre-service physical education and sports teachers see 21st century skills as important and perceive themselves as competent in possessing these skills. In order to carry 21st century skills a little further, it is recommended for further research to create greater awareness in this field with a mindset transformation, to increase the acquisition and use of these skills through various seminars and trainings.

Keywords: Contemporary skills, Physical education and sports teacher education, 21st century skills, Pre-service teacher

ÖZET

Araştırmanın amacı, beden eğitimi ve spor öğretmeni adaylarının 21. yüzyıl becerilerindeki yeterliliklerine ilişkin algılarını ve bu becerilerin kendilerine göre önem düzeylerini incelemektir. Nicel araştırma yöntemlerinden betimsel tarama modelinde gerçekleştirilen bu çalışmada 162 kadın ve 176 erkek olmak üzere toplam 338 gönüllü katılımcı yer almıştır. Veri toplama araçları olarak Aydın ve Tan Şişman (2021) tarafından geliştirilen "21. Yüzyıl Becerilerine Sahip Olmanın Önemi Ölçeği" ve "21. Yüzyıl Becerileri Yeterlilik Algısı Ölçeği" ile "Demografik Bilgi Formu" kullanılmıştır. Frekans tabloları, betimsel istatistikler, çarpıklık-basıklık analizi, bağımsız örneklem t-testi SPSS 25 ile uygulanmıştır. Çalışmanın bulguları, beden eğitimi ve spor öğretmeni adaylarının 21. yüzyıl becerilerini yeterince önemli gördükleri ve bu alanda kendilerini yeterli algıladıkları yönündedir. Ayrıca cinsiyet, sınıf ve genel not ortalaması değişkenlerine göre anlamlı bir farklılığa rastlanmamıştır. Sonuç olarak, beden eğitimi ve spor öğretmeni adaylarının 21. yüzyıl becerilerini önemli gördükleri ve bu becerilere sahip olma konusunda kendilerini yeterli algıladıkları görülmektedir. 21. yüzyıl becerilerinin biraz daha ileriye taşınabilmesi için bu alanda daha fazla farkındalık yaratacak, zihniyet dönüşümü sağlayacak araştırmalar yapılması, çeşitli seminer ve eğitimlerle bu becerilerin edinilmesi ve kullanımının artırılması önerilmektedir.

Anahtar Kelimeler: Çağdaş beceriler, Beden eğitimi ve spor öğretmeni eğitimi, 21. yüzyıl becerileri, Öğretmen adayı

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INTRODUCTION

The skills of yesterday are no longer sufficient in today's world. Naturally, today's skills will not be sufficient in the future. Developments in every field in today's world necessitate some innovations and changes in the context of training qualified people. The full implementation of these changes and developments and their contribution to social development can be made possible by evolving societies into information societies. It can be said that they consist of individuals who can organize themselves around change and innovation management (Bell, 1980: 506), use knowledge as an economic resource (Moore, 1997), and lead to the birth of new products, activities and processes (Naisbitt, 1984: 11) rather than knowledge abstraction.

It is estimated that many countries in the world will transform into an information society by the 21st century, and even within a few decades, the majority of the world's population will live in a global information society (Karvalics, 2007). Therefore, success in life and work in today's information society requires learning twenty-first century skills (Binkley et al., 2012), and it necessitates those educational environments and learner and teacher qualifications be shaped according to the qualifications required by the information society. Wang (2012) argued that educational objectives have changed over the years and that curriculum and objectives focus on teaching individuals the skills they will need as well as training them in accordance with rapidly changing employment conditions. As Silva (2009) emphasizes, it can be said that individuals must have "21st century skills" in order to find a place for themselves in the changing social structure and benefit from employment opportunities.

According to the 2007 report (Asian Development Bank, 2007), the importance of 21st century skills was again emphasized, stating that new skill sets linked to broader world challenges are needed to equip students with the tools needed to navigate the complexities of a global and knowledge-centered economy. In a project carried out by OECD, the characteristics of the new millennium's learners were grouped under three main headings. These are listed as "alternative cognitive features", "change in cultural and social values" and "expectations for teaching and learning" (Pedro, 2006). The Australian Ministry of Education (Australian Government, 2022) stated that 21st century skills are an important skill set rather than specific subject area knowledge for the digital and developing economy

and the future. Wagner (2008) argues that according to the views of business, non-profit organizations, and educational leaders, students need seven survival skills:

- Critical thinking and problem solving.
- Collaboration and leadership.
- Agility and adaptability.
- Enterprise and entrepreneurship.
- Effective oral and written communication.
- Access and analysis of information.
- Curiosity and imagination.

21st century skills consist of performance and perception as well as knowledge and skills, meaning that skills and knowledge are intertwined (Dede, 2010: 57). When 21st century skills are mentioned, it is observed that some focus on concepts such as "adaptability", some on "flexibility", some on "critical thinking", some on "systems thinking", while in fact different expressions are used only for a basic goal, but a common dialogue is needed to enrich 21st century ideas, and in this context, various framework programs have been prepared (Kay, 2010: 7). The Framework for 21st Century Learning, which concerns education systems, was developed by P21 by considering all the requirements mentioned, as a result of the collaboration of many experts such as educators, business representatives, etc. in order to ensure that students receive the maximum benefit (P21, 2009), subsequently, P21 joined Battelle for Kids, an organization that conducts various research on 21st century education in order to support 21st century resources and learning tools (Batellaforkids, n.d.).

The framework includes academic areas such as reading, world languages, arts, mathematics, history and geography, and also interdisciplinary areas such as business, entrepreneurship, civic engagement, health, and environmental literacy (Battelle for Kids, 2019). The "*learning and renewal skills*" (also known as "4C") that are associated with these topics and themes include creativity and innovation, critical thinking and problem solving, communication, and collaboration; "*information, media, and technology skills*," which include information, media, and technology literacy skills that will meet all of the technological needs of the age and produce more effective citizens; and "*life and career skills*" which include adaptability and flexibility, enterprise and self-management, productivity and responsibility, social and intercultural skills, leadership and responsibility skills, and the ability to navigate complex personal and professional environments more easily (Batella for Kids, 2019). In addition, five critical support systems, including 21st Century Standards, 21st Century Skills Assessment, 21st Century Curriculum and Instruction, 21st Century Professional Development, and 21st Century Learning Environments, have been identified for students to receive learning experiences which form 21st century competencies; and this is illustrated in Figure 1 (Batella for Kids, 2019).

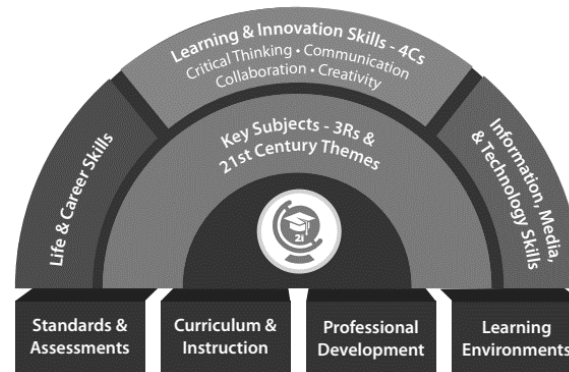


Figure 1. 21st century learning framework (Battelle for Kids, 2019)

Physical education and sport is a unique field that offers versatile contributions to individuals although it is not considered a core subject area or interdisciplinary subject. Considering that physical education and sport is a basic social institution provided in schools (Faucette & Hovell, 1997), longer participation in sports contributes to quality of life by reducing the risk of various diseases (Sallis & Owen, 1998: 39); physical development by helping in areas such as blood pressure, diabetes, bone development (Gutin, Barbeau & Yin, 2004; Bailey & Martin, 1994); affective development with stronger self-confidence (Fox, 1988) and less stress, anxiety and depression (Hassmen, et al., 2000); social development by reducing antisocial and criminal behaviors through structured activities (Gibbons, et al, 1995); mental development by improving mood and increasing mental alertness (Piercy et al., 2018: 32). In this context, 21st century skills are important for teachers who will teach these skills in physical education and sports classes, and therefore for pre-service physical education and sport teachers. The aim of the study is to examine the perception of pre-service physical education and sports teachers' 21st century skills competence and the level of importance of these skills from their perspective, and also to reveal descriptively the effect of the undergraduate curriculum on these skills during the undergraduate education of these students. The fact that there is no similar study when the literature is searched shows the importance of the study, and according to the results of the research, it is considered that it will contribute to the literature with the descriptive evaluation of the students' situations in this regard, both in terms of the curriculum and in terms of defining the current 21st Century skill levels of individuals.

The Importance of 21st Century Skills in Physical Education Teacher Education

In the ever-evolving field of physical education (PE), incorporating 21st-century skills is essential for equipping educators to effectively teach and inspire their students. Skills like critical thinking, creativity, collaboration, communication, and digital literacy are pivotal for PE teachers to refine their teaching methods and foster the holistic development of their students. Critical thinking, as detailed by Abrami et al. (2015), involves deliberate and self-regulatory judgment, which is crucial for evaluating and improving teaching strategies. In the context of PE, this translates to assessing instructional methods and making informed decisions to enhance students' physical and mental well-being (Ennis, 2011). Creativity, on the other hand, is about generating novel and impactful outcomes that drive innovation and problem-solving. According to Kirk (2009) emphasizes that creative teaching methods in PE can make activities more enjoyable and relevant, thereby fostering a lifelong interest in physical activity and health. Collaboration is equally important, not only among PE teachers but also with other educators. Johnson and Johnson (2009) note that collaborative learning boosts engagement and outcomes, contributing to success in educational psychology. Effective communication skills are crucial for PE teachers as they enable clear instruction, meaningful feedback, and positive student engagement, which are all essential for successful teaching and learning in PE settings (Graham, et al, 2013). Furthermore, digital literacy has become increasingly important with the integration of technology in education. The NEA (2012) underscores the need for educators to be adept at using technology to access, evaluate, and create information. Mohnsen (2006) suggests that PE teachers can leverage digital tools to track fitness progress, create online resources, and utilize virtual platforms for remote learning. Integrating these 21st-century skills in the education of PE teachers is crucial for developing adaptable, innovative, and capable educators who can address the diverse needs of their students and inspire a lifelong commitment to physical health.

METHOD

Research Design: The study was conducted in a survey research design. Survey research is a kind of study in which participants' perspectives on a subject or event as well as their skills, attitudes, abilities, etc. are determined with relatively larger samples (Büyüköztürk et al., 2008).

Sample Group: Within the scope of the research, the universities with physical education and sports teaching departments among the state universities in Turkey were listed and data collection tools were sent to all departments through the relevant deanships/directorates, but due to the earthquake, the epicenter of which was Kahramanmaraş/Pazarcık and which affected the whole Turkey during the data collection phase, a total of 20 universities across Turkey returned the data. A total of 356 participants took part in the research with the help of simple random sampling method.

Table 1. Items of the Importance of Having 21st Century Skills and 21st Century Skills Competence Perception Scale

Items
1. Creative thinking
2. Transform new/unique ideas into concrete and useful applications
3. Goal setting in learning processes
4. Seeing failures as learning opportunities
5. Critical thinking
6. Reasoning
7. Being aware of current developments in the world
8. Adapting to change
9. Solving problems by generating innovative and original strategies
10. Scientific thinking
11. Research
12. Effective Communication
13. Working collaboratively to generate creative and original ideas
14. Information literacy
15. Media literacy
16. Technology literacy
17. Adapt to change in different environments and roles (family, work, social life, etc.)
18. Presenting yourself in a professional manner
19. Being flexible
20. Respecting different views and beliefs
21. Self-regulation (goal setting and progress towards goal achievement)
22. Making predictions about the targeted career field(s)
23. Using time efficiently
24. Lifelong learning
25. Self-directed learning (identifying one's own learning needs and progressing towards meeting these needs)
26. Working effectively with culturally and socially diverse people/groups
27. Respect cultural and social differences
28. Becoming an entrepreneur
29. Being productive
30. Ability to perform several tasks at the same time
31. Taking initiative
32. To have an understanding of ethical work
33. Responsible decision-making
34. Leading others in the process of moving towards the goal
35. Guiding others in the process of moving towards the goal

Data collection tools: In the study, "The Importance of Having 21st Century Skills Scale" and "21st Century Skills Competence Perception Scale", which were developed by Aydın and Tan Şişman (2021) and whose validity and reliability studies were conducted, were used as data collection tools. Both scales consist of a total of 35 items. In the scoring phase for both scales, calculations are made by considering the average scores within the scope of all scales. The averages take values between 1 and 5, and it is stated that the higher the average, the higher the importance given or the perception of competence (Aydın & Tan Şişman, 2021). As a result of the scale development study, it was reported that the internal consistency coefficient of the Importance of Having 21st Century Skills Scale was .93 and the internal consistency coefficient of the 21st Century Skills Competence Perception Scale was .94 (Aydın & Tan Şişman, 2021). In the current study, the internal consistency coefficient of the Importance of Having 21st Century Skills Scale was calculated as .95 and the internal consistency coefficient of the 21st Century Skills Competence Perception Scale was calculated as .96. An internal consistency coefficient between .80 and 1.00 shows that the scale has a high level of reliability (Alpar, 2012). The items for both scales are presented in Table 1.

Data collection: The data were collected digitally by reaching students through all state university deanships/directorates. Participation was based on the principle of voluntariness. In the study, where participation was limited due to the earthquake, 18 data sets were found to be incorrect and a total of 338 correct data sets were reached.

Analysis of data: SPSS 25 program was used to analyze the data. The skewness and kurtosis values of both scales were examined to determine whether the data were normally distributed or not, and it was determined that the related values were between -1 and +1. According to Hair et al. (2013), values between +1 and -1, and according to Tabachnick, Fidell & Ullman (2013), values in the range of +1.5 to -1.5 signify a normally distributed set of data. In the context of these results, it was concluded that the data were normally distributed. Among the statistical procedures, frequency tables, descriptive statistics, skewness kurtosis test, independent samples T-test and one way ANOVA were used.

Ethical compliance: This research was evaluated by Karabük University Social and Human Sciences Research Ethics Committee and its ethical appropriateness was unanimously accepted with the meeting number 2022/09 on 08.12.2022.

RESULTS

The findings of the research are as follows.

Table 2. Demographic Information

Variable		f	%
Gender	Male	176	52,1
	Female	162	47,9
	Total	338	100,0
Grade	1 st Grade	120	35,5
	4 th Grade	218	64,5
	Total	338	100,0
CGPA*	Under 1,99	0	0
	2,00 – 2,99	168	49,7
	3,00 – 4,00	170	50,3
	Total	338	100,0

*Cumulative grade point average

According to table 2, there were 176 male and 162 female participants; 120 first-year and 218 fourth-year students; 168 participants with a CGPA of 2.00 - 2.99 and 170 participants with a CGPA of 3.00 - 4.00.

Table 3. Findings on the Importance of Having 21st Century Skills Scale and 21st Century Skills Competence Perception Scale

	\bar{X}	SD
Importance of Having 21st Century Skills	4,45	,39
21st Century Skills Competence Perception	4,03	,53

According to Table 3, the mean of the participants on the Importance of Having 21st Century Skills Scale was 4.45, and the mean of the participants on 21st Century Skills Competence Perception Scale was 4.03.

Table 4. Independent Samples T-Test Results of the Importance of Having 21st Century Skills Scale and 21st Century Skills Competence Perception Scale According to Gender

	Gender	n	\bar{X}	SD	t	p
Importance of Having 21st Century Skills	Female	162	4,46	,029	-,479	,63
	Male	176	4,44	,030		
21st Century Skills Competence Perception	Female	162	4,03	,036	-,087	,93
	Male	176	4,03	,044		

When table 4 is examined, there was no significant difference between the mean scores of the importance of having 21st century skills scale and the mean scores of the 21st century skills competence perception scale according to gender variable ($p>.05$).

Table 5. Independent Samples T-Test Results of the Importance of Having 21st Century Skills Scale and 21st Century Skills Competence Perception Scale According to Grade Level

	Grade	n	\bar{X}	SD	t	p
Importance of Having 21st Century Skills	1 st Grade	120	4,44	,35	-,158	,87
	4 th Grade	218	4,45	,41		
21st Century Skills Competence Perception	1 st Grade	120	4,02	,55	-,083	,93
	4 th Grade	218	4,03	,52		

According to table 5, there was no significant difference between the mean scores of the importance of having 21st century skills scale and the mean scores of the 21st century skills competence perception scale according to the grade level variable ($p>.05$).

Table 6. Independent Samples T-Test Results of the importance of having 21st century skills and perception of 21st century skills competence according to CGPA

	CGPA*	n	\bar{X}	Ss	t	p
Importance of Having 21st Century Skills	2.00-3.00	168	4,45	,41	,139	,89
	3.00-4.00	170	4,45	,36		
21st Century Skills Competence Perception	2.00-3.00	168	4,02	,55	-,115	,90
	3.00-4.00	170	4,03	,52		

*Cumulative grade point average

As stated in table 6, there was no significant difference between the mean scores of the importance of having 21st century skills scale and the mean scores of the 21st century skills competence perception scale according to cumulative grade point average variable ($p>.05$).

DISCUSSION

The findings obtained from this study, the importance of having 21st century skills by students in physical education and sport teaching education and their perceptions of competence and the effect of the undergraduate program on these skills were descriptively investigated, were discussed within the framework of the relevant literature.

When table 3 is examined, according to the participants' responses to the importance of having 21st century skills scale, it is seen that they think that having these skills is generally important ($\bar{X}=4.45$), while their perception of competence for these skills ($\bar{X}=4.03$) is at a sufficient level.

In the importance of having 21st century skills scale, the item with the lowest mean score was “*adaptation to change in different environments and roles (family, work, social life, etc.)*” ($\bar{X}=4.13$). Considering that the maximum score for this item is 5, it can be interpreted that students still find this item important. Coşkuner, et al. (2021) concluded in their study with secondary school students that children who are engaged in sports are better than others in the field of life skills, which they explain as the individual's ability to move comfortably in a different social structure. Zerengok, et al. (2018), in their study, examining the social adaptation of foreign students, reported that students who engaged in leisure time activities including sports activities, stated that engaging in these activities had positive effects on their social adaptation processes. Moradi and Soroush (2023) concluded in their study that especially team sports significantly accelerated the social adaptation process of individuals. Liu, et al. (2023) similarly stated in their study that physical exercise contributed to the social adaptation process. Sezen-Balçıkanoğlu (2009) explained in her study that physical education is the most important area in the development of moral character, it is unique in that, it can teach a very important concept such as fair-play, which is the symbol of justice and honesty, by helping the development of empathic feelings. While being involved in sports can be explained by the fact that they constantly have to share the same environments with different individuals both during the course and in extracurricular activities, they are familiar with different views and beliefs and therefore can easily adapt to different environments. When the results of the study are considered, it can be interpreted that the participants' involvement in sports has a share in the importance of this item.

In the 21st century skills competence perception scale, although the item with the lowest mean was “*media literacy*” ($\bar{X}=3,71$), it is possible to say that it is sufficient, considering the maximum mean that can be obtained from the scale ($\bar{X}=5.00$). Aydın and Tan Şişman (2021) also stated in their study that pre-service teachers found themselves sufficient in this skill, while Karaman (2016) reported in his study that pre-service teachers had this skill at a medium level. Mallia et al. (2020) concluded in their study with sports science students that they did not consider themselves fully competent in media and did not recognize the media as a source of information. Galli et al. (2021), in their study with sports high school students on increasing online media literacy about performance-enhancing substances, provided a training on this subject by forming a control and experimental group and observed an increase in the media literacy level of the experimental group, while both groups were at medium levels before the training. Erdem and Erişti (2018) concluded in their study that pre-service teachers have medium level media literacy skills. Considering the results of the study, it is seen that pre-service physical education and sports teachers obtained similar results with the others. This situation can be interpreted as the fact that technology is now used very quickly and easily almost everywhere as a requirement of

the current century, and that all kinds of information, including media sources, can be accessed very easily even from a very young age.

The highest mean for both scales was found in the “*effective communication*” item ($\bar{X}=4.69$; $\bar{X}=4.18$). While there are studies (Norliza, 2010; Domenech & Gomez, 2014; Jurik et al., 2014) stating that communication is an integral part of education with its positive effects on motivation, it has also been reported that the learning and teaching process cannot be a successful process without communication. Moreover, it is stated that communication is the most effective tool in the classroom and teacher's success in this regard in the classroom will cause positive reflections (Duta, et al., 2015). Küçük (2012) concluded in his study with pre-service music teachers that they had good communication skills. Tepeköylü, et al. (2009) reported in their study with school of physical education and sports students that the participants had a high perception of communication skills. Karaman and Arısoy (2023) stated in their study with physical education and sports teachers that the effective communication skills of the sample were at a high level. In this context, when the study results are considered, It may be inferred that pre-service teachers of sports and physical education are proficient at “*effective communication*” skills. Mirzeoğlu, et al. (2005) stated that teaching practice courses are an important factor in improving communication skills, while Pepe, et al. (2005) similarly stated that the physical education and sports teaching undergraduate program positively affects this skill. In addition, within the framework of the Ministry of National Education General Qualifications for the Teaching Profession (2017), it is seen that “*effective communication*” is among the qualities that a teacher should have. Similar results were obtained in studies, and the participants of this study stated that while they considered this skill important, they also considered themselves competent in this field.

No significant differences were found between the participants' means the importance of having 21st century skills scale and 21st century skills competence perception scale according to gender variable ($p>.05$). Vebrianto, et al. (2020) in their study with pre-service science teachers stated that both genders have similar competences at 21st century skills. In his study conducted in 2020, Erten found that there was no significant difference among pre-service teachers in terms of gender variable regarding 21st-century skills. Uyar and Çiçek (2021) did not find a significant difference between gender and 21st century skills in their study with different branch teachers. This can be interpreted as both genders can equally benefit from similar educational opportunities, which enables them to give similar kind of importance to the 21st century skills and develop a similar perception of competency.

There was no significant difference found between the participants' means on the importance of having 21st century skills scale and 21st century skills competence perception scale according to participants' cumulative grade point average variable ($p>.05$). Özden et al. (2018) did not find a significant difference between the cumulative grade point averages of the participants and their 21st century skills in general in their study with pre-service teachers of different branches, but they found a significant difference in favor of one class in one sub-dimension of the scale. In their study with pre-service physical education and sports teachers, Güler and Tuncel (2022) found that there was no significant difference in 21st-century skills according to grade point averages variable. Similarly, Gelmez Burakgazi et al. (2019) did not find a significant difference in his study. This result may be explained by the fact that pre-service teachers, regardless of academic achievement, have a similar perception of competence, and 21st century skills are considered similarly important as a requirement of this age.

In the light of the data collected from 1st and 4th grade pre-service teachers within the scope of the research, no significant difference was found between the participants' means on the importance of having 21st century skills scale and 21st century skills competence perception scale according to the grade variable ($p>.05$). While Özden et al. (2018) found significant differences between 21st century skills in favor of only 3rd grade students in their study, Diker Coşkun (2009) stated that fourth grade students had higher averages in lifelong learning skill, which is among 21st century skills, compared to first grade students. Erdoğan and Eker (2020) reported that the 21st century skills of pre-service teachers did not differ in terms of grade level, and also Gökbulut (2020) stated that there was no significant difference between the 21st century skill levels of pre-service teachers according to the grade variable. Despite the similar results in literature with this research outcome, it is still considered to be one of the striking findings of the study. It can be interpreted that the physical education and sports teaching undergraduate program, which was last renewed in 2018 and implemented as a core curriculum, has almost no positive reflection on the 21st century skills of pre-service teachers. And also it can be added that lecturers of this field may need to be developed as part of 21st century skills and they may be encouraged to use methods and techniques which support these skills in their lessons. In this context, it can be said that it is important to determine the missing or deficient aspects in terms of 21st Century skills by subjecting the curriculum to a comprehensive evaluation and detailed examination within the framework of education policies.

Conclusions: It is seen that pre-service physical education and sports teachers consider 21st century skills to be sufficiently important and perceive themselves as competent in this field. Additionally, no significant difference was found according to gender, grade and cumulative grade point average variables. Especially when the grade variable is taken into consideration, it appears that students have acquired these skills at a sufficient level in secondary education. However, in order to carry 21st century skills a little further, it is recommended for further research to create greater awareness in this field with a mindset transformation, to increase the acquisition and use of these skills through various seminars and trainings, and finally to conduct further studies on the extent to which the physical education and sports teaching undergraduate program supports these skills.

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