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Examining Primary School Teachers' 21st Century Teacher and Learner Skills

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Abstract: In the 21st century, where knowledge has rapidly increased and changed, social order and individual needs are also rapidly changing. However, new jobs and professions are emerging. The ability of countries to keep up with this new formation depends on their training of human potential as individuals who can meet the professional needs of the new century. This will be possible by implementing 21st century skills training programs, which are expected to meet the needs of the new century. The most important task here belongs to the teachers who will apply these training programs. For this reason, for the 21st century skills to be gained to the students, teachers with these skills must be trained first. In this direction, the aim of the research is to examine the level of pre-service teachers who will be both learners and teachers of the 21st century and to determine whether the level of possession of these skills differs according to gender and class variables. The research was done with relational screening model. The universe of the research consists of 2nd, 3rd, and 4th year students of İnönü University Faculty of Education Class Teaching in the 2019-2020 academic year. It is aimed to reach the entire universe. Mann Whitney U and Kruskal-Wallis H Test were used for data analysis. 21st century teacher skills scale and 21st century learner skills scale developed by Göksün (2016) were used as data collection tools. As a result of the research, there was a significant difference in autonomous, managerial, productive, and flexible teaching skills according to gender and grade level.

Keywords: Social studies teacher candidate, Teacher skills, Learner skills, 21st Century skills

Introduction

Mankind has struggled with the difficulties he has faced to continue his life by showing many changes and developments in every field, from the hunting society to the agricultural society, from the industrial society to the information society we live in (Tuğluk, 2019; Hotaman, 2019). During this struggle, it is seen that there are some changes in the skills and behaviors of individuals in different social processes (Özçelik & Eke, 2019). In the 19th and 20th century, individuals are expected to be effective, fast, honest, fair, hardworking, who can get along well with others (Hamarat, 2019), as well as creativity, critical thinking, problem solving, decision making, communication and cooperation, information and They are expected to grow up as people with "soft skills" such as communication technologies, information literacy (Yılmaz, 2016) (MEB, 2018).

The ability of countries to keep up with the rapid changes in the social field, economy and technology under the influence of the 21st century depends on their ability to raise their human potential in accordance with the requirements of the age (Yılmaz, 2016). At this point, lessons aiming to raise individuals as qualified and effective citizens with the skills required by the age are of great importance in defining and gaining 21st century skills (Bayır, 2016). 21st century skills express the characteristics that individuals must possess and develop continuously in order to be effective, productive and qualified in our age (Hamarat, 2019).

The most important task of equipping 21st century learners with the skills of the century we live in and raising them as individuals who use these skills for the benefit of humanity falls on 21st century teachers (Göksün, 2016; MEB, 2018). It is not that they want to present the information expected from today's teachers as a

package and memorize them, but be educators who prepare them for the global world based on real life, work and developing technology (Ekici, 2017). It is thought that this technology should be applied in all lifetimes, especially in educational environments, as it is individuals who are grown in technology culture as well as using traditional education methods in the training of 21st century learners who are defined as "digital native" and spend most of their time with information technology tools (Prensky, 2001; Günüç, 2013; Bozkurt & Çakır, 2016).

With the change in the qualities of the 21st century learner and teacher, the old school paradigm has also changed; In addition to teaching information in schools, it is aimed to raise students with sound characters and skills such as problem solving, critical thinking, communication and cooperation (Yalçın, 2018). This is thought to be possible through the use of advanced technologies integrated into schools, classroom environments in which online and traditional learning are harmonized, personalized teaching plans considering individual differences, problem-based learning, project-based learning, flexible learning, creation workshops and portfolio evaluation. (Yılmaz, 2016).

21st century learning, defined by many influential institutions, is an effective concept in determining educational policies and exercises in most regions (Bernhardt, 2015). In line with the 21st century learning and 21st century skills in the Turkish Education System, it will facilitate the acquisition of skills required by the new age in schools within the scope of 2023 Education Vision; provide science, art, sports and culture-oriented studies; It was decided to open design-skill workshops at primary, secondary and high school levels, where design and production will be at the forefront rather than having knowledge (MEB, 2018).

Various skill frameworks have been developed in several countries, especially in the United States, by some institutions and organizations, which indicate the learning content and stages of the new millennium as part of their corporate brand (Dede, 2009). The aim of these frameworks is to explain with which skills the individuals to be raised in the 21st century world should be equipped. World Economic Forum (WEF), Organization for Economic Development and Cooperation (OECD), International Education Standards Association (ISTE), implemented in 21 states and 33 institutions in the United States and supported by the participation of many educators and business people. Century Partnership "(P-21) from the project, Turkey Qualifications Framework and described by many researchers consider in the 21st century skills although in different groupings also shows that many of the skills mentioned similar content.

In the researches, it was stated that the students did not really graduate in schools ready for business life, and the 21st century skills that children should have in the future were named as knowledge and skills generation. These skills are; learning and innovation skills, digital literacy skills, life and career skills are addressed in three main groups and each group is covered in many subtitles (Trilling & Fadel, 2009). In parallel with this, within the framework of P-21 learning, the skills in this learning zone are based on various key issues. Accordingly, some interdisciplinary themes have been created. These themes are shaped on four basic frameworks (P21, 2019).

Wagner (2008) defined 21st century skills as "survival skills". He examined these skills under seven headings: critical thinking and problem solving, agile intelligence and adaptation, entrepreneurship and initiative, effective oral and written communication, cooperation and leadership, curiosity and imagination, accessing and analyzing information.

International Education Standards Association (ISTE) emphasized the importance of technology in defining 21st century skills. Students who are competent in reaching their learning goals, digital citizens who know the responsibilities of living, learning and working in a world connected with digital networks, knowledge making using meaningful digital tools, innovative designer who uses technology in problem identification and solving, understand the problems in a way that increases the effect of technological developments and computational thinker who develops solution strategies, creative communicator who communicates using digital platforms that meet their goals, and global collaborators who work effectively with other teammates explained under seven topics (International Society for Technology in Education., 2016).

Turkey Qualifications Framework in the "Key Competences for Lifelong Learning" have been identified. These are explained as communication in mother tongue, communication in foreign languages, mathematical competence and basic competencies in science / technology, digital competence, learning to learn, social and civic competencies, taking initiative and entrepreneurship, cultural awareness and expression. European Qualifications Framework in parallel with the development of the education with these competencies, the expansion of lifelong learning, the social life of individuals and aims to experiencing the appropriate changes to the expectations of the business world (Turkey Qualifications Framework, 2015).

The Organization for Economic Development and Cooperation (OECD) explained the skills that the learners of the new millennium should have in the 2030s as "transformative competencies" in the project named "Selection and Definition of Competencies" (DeSeCo). OECD has addressed them under three main headings: knowledge, skills, attitude, and values. In addition, these competencies have been compared to a directional "learning compass" system with a strong structure consisting of family, teacher, peer and society (OECD, 2018).

Teachers have the greatest responsibility in gaining the 21st century skills defined by different institutions and organizations and various researchers to the learners of the new millennium. Accordingly, in order for teachers to transfer their new century skills to their students, they must first be trained as teachers with these skills. 21st century teacher skills were handled under three main headings as "professional knowledge", "professional skill", "attitude and values" as a result of the updates made by the Ministry of National Education (MEB) regarding the profession of teaching profession. Professional knowledge; field knowledge, field education information and legislation knowledge. Professional skill; He considered education and training as planning, creating learning environments, managing learning and teaching process, measuring and evaluating. On the other hand, he explained attitudes and values as national, spiritual and universal values, approach to students, communication and cooperation, personal and professional development (MEB, 2017).

The International Education Standards Association [ISTE]) named the skills that teachers should have in the 21st century as ISTE Standards. He defined the teachers who should have these standards as follows.

- Using technology to facilitate students' learning,
- Supporting and improving the success of its students and leading them in this process
- Being a digital citizen that will enable students to be active in the digital world,
- Designing original classroom environments considering individual differences,
- Collaborating with both students and colleagues,
- Analyst individuals who facilitate learning with technology and can use and analyze the data they have in order to reach their students' learning goals (ISTE (International Society for Technology in Education), 2016).

Lemov (2010) addresses the competencies required for effective teaching under seven main headings. These; explained high academic expectations, planning that provides academic success, structuring and presenting lessons, ensuring student participation in the lesson, creating a strong class culture, creating and maintaining high behavioral expectations, and structuring character and integrity.

The aim of this study is to examine the level of pre-service teachers who will be both learners and teachers of the 21st century and to determine whether the level of possession of these skills differs according to gender and class variables.

Method

Relational screening model was used in this research. Screening research is a research model that aims to describe a situation that exists in the past or already (Karasar, 2016). In addition, screening research enables the determination of the relationships and the guesswork of the researcher. The aim is to understand the current situation and interpret it better. Studies that examine relationships and connections are called relational studies (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2010). The universe of the research is 2. and 3. and 4th grade students. Since it was aimed to reach the entire universe, sampling was not made. All students studying were reached and 198 scales with sufficient conditions were evaluated. In the research, the data were developed by Göksün (2016) "21. Century Teacher and Learning Skills Use Scale ". Since the data set does not show normal distribution, Mann-Whitney U Test was used for two-category variables and Kruskal-Wallis H Test was used for three-category variables.

Results and Discussion

Table 1. Mann-Whitney U Test Results of 21st Century Learner Skills by Gender

Skill Area	Gender	n	Mean Rank	Sum of Ranks	U	p
Cognitive	Female	137	98,79	13534,50	4081	,794
	Male	61	101,09	6166,50		
Autonomous	Female	137	91,44	12527,00	3074	**,003**
	Male	61	117,61	7174,00		
Cooperation and Flexibility	Female	137	96,14	13171,00	3718	,215
	Male	61	107,05	6530,00		
Innovativeness	Female	137	95,61	13098,50	3645	,145
	Male	61	108,24	6602,50		

In Table 1, it is seen that there is no significant difference in terms of cognitive, collaboration and flexibility, innovation skills sub-dimensions of 21st century learner teacher candidates in terms of gender, and there is a significant difference in terms of gender in autonomous skills. It is seen that this differentiation is in favor of male candidates. The differentiation of autonomous skills in favor of male candidates can be interpreted as an indication that male candidates have higher learning skills than female candidates, are aware of their own learning paths, and have higher self-confidence and self-control. In addition, due to the family structure of the Turkish society, it may be possible for male teacher candidates to use their autonomous skills at a higher level because they think that they should have a profession in order to care for their families and to be more autonomous with the responsibility they require. This indicator highlights attitudes of Turkey's dad in certain areas of economic weakness, the girl in the children's homes, support the view that jobs should help their mother. It can be said that even if the girls who grew up in the family environment where these thoughts are dominant continue their education life, they may feel more inadequate in terms of learning and personal autonomy than men. Douvan and Adelson (Açıkgenç at all., 2011) stated that the most important reason for individuals to have autonomous features is the family environment in which they grow up. This result shows that the socio-economic characteristics of the family have an important effect on the individual's attitudes, values and behaviors.

Table 2. Mann-Whitney U Test Results of 21st Century Teacher Skills by Gender

Skill Area	Gender	n	Mean Rank	Sum of Ranks	U	p
Management	Female	137	104,25	14282,00	3528	,080
	Male	61	88,84	5419,00		
Techno Pedagogical	Female	137	98,70	13522,50	4069	,769
	Male	61	101,29	6178,50		
Approval	Female	137	103,68	14203,50	3606	,089
	Male	61	90,12	5497,50		
Productional	Female	137	103,19	14137,50	3672	,160
	Male	61	91,20	5563,50		
Flexible Teaching	Female	137	97,08	13299,50	3846	,363
	Male	61	104,94	6401,50		

In Table 2, it is seen that there is no significant gender difference in the 21st century teacher skills sub-dimensions of managerial, technopedagogical, authoritative, productive and flexible teaching skills of classroom teacher candidates.

Table 3. Kruskal-Wallis H Test Results According to Class Level of 21st Century Learner Skills

Skill Area	Grade Level	n	Mean Rank	Sd	χ^2	P	Significant Difference
Cognitive	2	65	97,73	,42060	,185	,912	
	3	62	98,75				
	4	71	101,77				
Autonomous	2	65	83,98	,60625	10,340	**,006**	
	3	62	97,63				
	4	71	115,35				
Cooperation and Flexibility	2	65	97,76	,73037	,372	,830	
	3	62	97,53				
	4	71	102,81				
Innovativeness	2	65	89,01	,84249	3,677	,159	
	3	62	101,72				
	4	71	107,17				

As it can be seen in Table 3, there is no significant difference in grade levels of classroom teacher candidates in the cognitive, cooperative and flexibility skills of 21st century learner. There is a significant differentiation in the field of autonomous skill. This differentiation is in favor of 4th grade between 2nd and 4th grades. The fact that autonomous skills include skills such as independent thinking, coping with problems alone, and choosing to work independently in group work can be interpreted as pre-service teachers who have higher self-confidence and more autonomous personality than 2nd grade teacher candidates. The statement that Pavia (2005) 's social, economic and educational environments in which learners are involved in the development of autonomous learning skills is effective supports this interpretation. Accordingly, the fact that 4th grade students are in the university environment in a period of more than the 2nd grade can be shown as the reason for 4th grade pre-service teachers to use higher levels of autonomous learning skills.

Table 4. Kruskal-Wallis H Test Results According to Class Level of 21st Century Teacher Skills

Skill Area	Grade Level	n	Mean Rank	Sd	χ^2	P	Significant Difference
Management	2	65	115,48	,48876	7,571	**,023**	**2-4**
	3	62	92,26				
	4	71	91,19				
Techno Pedagogical	2	65	102,94	,50318	,815	,665	
	3	62	94,21				
	4	71	100,97				
Approval	2	65	105,65	,43066	3,427	,180	
	3	62	103,38				
	4	71	90,49				
Productional	2	65	110,28	1,57917	7,068	**,029**	**2-4**
	3	62	103,72				
	4	71	85,95				
Flexible Teaching	2	65	119,01	,84777	11,759	**,003**	**2-3,4**
	3	62	91,31				
	4	71	88,80				

There is no significant difference in grade levels of the 21st century teacher skills of the primary school teacher candidates in technopedagogical and authoritative skills sub-dimensions. In the area of flexible teaching, there is a significant difference between 2nd grade and 3rd and 4th grades. This differentiation is in favor of 2nd graders. According to the findings of the research, it is seen that the pre-service teachers' use of flexible teaching skills in upper classes decreased. Flexible teaching skills can be explained as the active use of these activities in the process of organizing, learning and teaching teachers' out-of-class learning activities. The fact that the results are in favor of the 2nd grade can be interpreted as the intensive theoretical knowledge included in the program in the first years of the undergraduate education caused the use of this skill area to be high, leading to a decrease in their perceptions towards flexible teaching skills depending on the practical lessons taken in the 3rd and 4th grades.

In the sub-dimension of managerial skills, a differentiation was found between the 2nd and 4th grades. This differentiation is in favor of 2nd graders. Managerial skills refer to skills related to teachers' teaching process. This situation may be due to the fact that 2nd grade teacher candidates perceive classroom management more

easily due to not taking practical courses. Class 4 candidates' being active in the learning-teaching process due to applied lessons and being aware of the difficulties in classroom management may cause them to realize that the process is not as easy and perceive themselves insufficiently in managerial skills.

Conclusion and Recommendations

The fact that elementary teacher candidates' use of autonomous skills, which is the sub-skill area of 21st century learner skills, differs in favor of male candidates, may show that female candidates need personal development support in terms of attitudes and values such as self-confidence, autonomy and self-control. Therefore, in order to minimize the differentiation between female and male teacher candidates in terms of autonomous skills, necessary support can be provided in the undergraduate education process for female candidates.

It has been observed that the level of use of flexible teaching skills, which is the sub-skill area of 21st century teacher skills, decreases as the grade level increases. This situation may indicate the decline in pre-service teachers' attitudes towards organizing teaching and learning activities outside the classroom. In this regard, we can conclude that teacher candidates will remain passive in organizing out-of-class educational activities after starting the profession. In line with the 2023 educational vision, the Ministry of National Education emphasizes that schools should cooperate with museums, universities, science centers, culture and arts centers and technoparks around it. Therefore, it is of great importance that 21st century teachers have high levels of flexible teaching skills. In order to increase the level of use of flexible teaching skills, which decreases gradually according to the grade level of teacher candidates, the applications in this direction can be increased by noting the importance of out-of-school education activities.

The differentiation of the use of administrative skills, which is one of the sub-dimensions of 21st century teacher skills of the pre-service teachers, in favor of the 2nd grade, and the inversely proportional change of the use levels of this skill in the first years of the undergraduate education of the teacher candidates, started with a high level of perception and more idealistic thoughts. this can be interpreted as their idealism decreases as they approach. In order for the elementary teacher candidates to have effective classroom management skills and to use these skills actively in the process, it may be suggested to increase the classroom management courses in the undergraduate programs, especially in the field of application.

The decrease in the level of pre-service teachers' productive skills, which is one of the sub-dimensions of 21st century teacher skills, shows that applied education is important in training teachers. In order to keep the productive skill perceptions of pre-service teachers in upper classes, they can be developed to develop their own teaching materials to be used in practice lessons.

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