The Relationship between 21st Century Skills of the Teachers and Teacher Autonomy

Emrah Koçak[a, b], Ramazan Karatepe[c]

Özet

The aim of this study is to examine the relationship between teachers' 21st-century teaching skills and their autonomy. The sample of the research, which was carried out with a relational survey design, consists of 297 teachers working in private and public schools in Mersin in the spring term of the 2020-2021 academic year. The data of the study were collected using the "21st-century teacher skills scale" and "teacher autonomy scale". In the analysis of the research data, t-test, ANOVA and Pearson correlation coefficient, which are parametric statistical techniques, were used. While it was found that the teachers' autonomy differed significantly according to the education level worked, no significant difference was found in other variables, either in the 21st-century teacher skills scale or in the teacher autonomy scale. In addition, a positive relationship was revealed between 21st-century teacher skills and teacher autonomy.

Öğretmenlerin 21. Yüzyıl Becerileri ile Öğretmen Özerkliği Arasındaki İlişki

Özet

Bu çalışmanın amacı, öğretmenlerin 21. yy. öğretme becerileri ile özerklikleri arasındaki ilişkiyi incelemektir. İlişkisel tarama deseni ile gerçekleştirilen araştırmanın örneklemini Mersin ilinde 2020-2021 eğitim öğretim yılı bahar döneminde özel ve devlet okullarında görev yapan 297 öğretmen oluşturmaktadır. Araştırmanın verileri "21. yy. öğreten becerileri ölçeği" ve "öğretmen özerkliği ölçeği" kullanılarak toplanmıştır. Araştırma verilerinin analizinde parametrik istatistiksel tekniklerden t-testi, ANOVA ve Pearson korelasyon katsayısı kullanılmıştır. Öğreten özerkliğinin çalışılan eğitim düzeyine göre anlamlı düzeyde farklılaştığı tespit edilirken, gerek 21. yy. öğretmen becerileri ölçeğinde gerekse öğretmen özerkliği ölçeğinde diğer değişkenlerde anlamlı bir farklılık bulunamamıştır. Ayrıca 21. yy. öğreten becerileri ile öğretmen özerkliği arasında pozitif bir ilişki olduğu ortaya çıkmıştır.

[a] İletişim Yazarı: emrahkocakphd@gmail.com

[b] Doktorant.   Mersin Üniversitesi. ORCID ID: 0000-0002-9361-820X.

[c] Dr. Öğretim Üyesi.   Mersin Üniversitesi. ORCID ID: 0000-0002-9137-204X.

Introduction

In modern life, education is of high importance in terms of ensuring and sustaining both the wealth and development of individuals and societies in social and economic terms. It is possible to claim that the basic building block in the transfer of education, which is vital for the individual to have a life of high standards throughout his life in all types and levels, is undoubtedly the teachers. In this respect, it is emphasized that the most dominant factor affecting the academic success of students is teachers, and reaching the goals designed in the field of education is closely related to the qualifications and competencies of the teachers guiding this process (Sanders & Rivers, 1996; Ministry of National Education [MEB], 2017).

In other words, teacher competencies, which are defined as the skills, attitudes and knowledge that must be possessed in order to fulfill the teaching profession effectively and efficiently (MEB, 2017), are significant. On the other hand, constantly changing conditions naturally bring about the change in the qualifications that teachers should have and the qualifications that are expected. It should not be thought that teachers with the same qualifications play a role in the training of the required manpower. The requirement of the teachers with different qualifications started with the transition from agricultural societies to industrial societies with machines using water and steam power. It is possible to remark that these qualifications increased in number with mass production technologies. Up to now, it can be said that the abovementioned qualifications have been enriched with the development of digital technologies. This situation is also pointed by Turkish Education Association by underlining the fact that social, economic and technological developments and new approaches in education might probably lead to the traditional roles and functions of teachers to change (TED, 2009).

As a consequence of these structural and social changes and transformations, it can be suggested that the last thing a teacher should present to his/her students is extra information. It has been put forward by Harari (2018) that students are exposed to too much information than required; instead, the author offers that students require abilities such as understanding information, comprehending the importance of things and transforming many pieces of information related to the world to a wide perspective. According to another similar view, teachers offering teaching experiences to 21st century learners should use 21st century teaching skills (Orhan Göksün, 2016). The author also adds that the definition of national competencies and skills, by considering national possibilities and the use of competencies related to skills accepted in the international literature, will be a more appropriate approach in revealing the 21st century teacher skills (Orhan Göksün, 2016).

In such a context, the general teacher competencies of the Ministry of National Education for national professional competencies and the criteria determined by the international educational technologies community (ISTE) for teachers are used for the competencies that teachers should have in the field of educational technologies. Furthermore, there are 49 techniques put forward by Doug Lemov for competencies used in the classroom environment and measures theorized by Lonnie Melvin for pedagogical competencies to provide effective teaching. Among these measures containing a number of principles, which are essentially to ensure the effectiveness of teaching, the following 21st century teaching skills are included. (Orhan Göksün, 2016, p. 28).

21st century teaching skills:

a. The teaching and learning process,

b. Monitoring and evaluating learning along with development,

c. Program and content information,

d. Facilitating students' learning and encouraging creativity,

e. Designing and developing learning environments and assessment activities suitable for the digital age,

f. Being a model for working and learning in the digital age,

g. Being a model in digital citizenship,

h. Participating in professional development and leadership activities,

i. School, family and community relations,

j. Creating high academic expectations,

k. Personal and professional values–professional development,

l. Making plans for academic success,

m. Structuring and presenting the lesson,

n. Ensuring student participation in the lesson,

o. Creating a strong classroom culture,

p. Knowing the student,

q. Establishing and maintaining high and behavioural expectations,

r. Constructing character and integrity,

s. Editing environments for change,

t. Organizing personal space and materials,

u. Reflective teaching model,

v. Practicing between lessons,

w. Collaborating with parents,

x. Creating a permanent learning environment,

y. Creating a culture of citizenship,

z. Being a model as a leader.

In addition to these, another concept that is considered to be closely related to 21st century teacher skills is teacher autonomy.

According to a definition that is frequently cited in the related literature, autonomy in business life is defined as the amount of freedom an employee has to plan his work and to find the ways to be followed while doing it (Hackman & Oldham, 1976). Autonomy is a significant concept in education as well as in business life. It is seen that the concept, which can be handled from different perspectives such as student autonomy, professional autonomy, individual autonomy and organizational autonomy in the education dimension, is also the subject of research in the dimension of teacher autonomy (Akçay & Sevinç, 2021; Canbolat, 2020; Çolak, 2016; Elo & Nygren Landgärds, 2021; Karatay, Günbey & Taş, 2020; Kavgacı & Çalık, 2017; Kılınç, Bozkurt & İlhan, 2018; Nguyen, Pietsch & Gümüş, 2021; Üzüm, 2014).

Taking Hackman and Oldham's (1976) definition into consideration, teacher autonomy can be thought of as the area of free movement that teachers have while performing their duties. Recent research has very positively portrayed teacher autonomy, which is influenced by elements such as organizational support, teacher expertise, peer collaboration and the school environment. In the previous studies, it was emphasized that there is a positive relationship between teacher autonomy and the cooperative management style of school administrators; thus, it is probable that teacher autonomy is a significant predictor of professionalism (Akçay & Sevinç, 2021; Karatay, Günbey & Taş, 2020). Furthermore, in a recent meta-analysis study by Aytaç (2020) in which 43 studies have been examined, it has been highlighted that supporting teacher autonomy can have positive effects on job satisfaction. A study in a similar vein, Şentürken & Oğuz (2020) pointed out that teachers' job satisfaction and autonomy are correlated in the sub-dimensions of autonomy although the levels of them differ. Autonomy and its relationship with variables, such as teacher autonomy, school climate, job integration, leader member interaction and support of learner autonomy, are often encountered as concepts that are examined together with job satisfaction (Çolak & Altınkurt, 2017; Kavgacı & Çalık, 2017; Yazıcı & Yılmaz, 2016). In addition, it is important to underline that global trends in reducing teacher autonomy and increasing teacher accountability are also the subjects of research, and standardized national tests are defined as one of the many factors that limit teacher autonomy (Elo & Nygren Landgärds, 2021). An additional point made by Nguyen, Pietsch & Gümüş (2021) highlights that teacher autonomy and school culture affect collective teacher innovativeness; hence, teacher autonomy and cooperation are positively related to each other in their research. This point emphasizes the importance of developing a sense of teachers' autonomy and innovation.

In the related literature, it is obvious that the number of studies dealing with 21st century teacher skills and teacher autonomy is increasing. Along with the studies that only focus on teacher skills (Tican & Deniz, 2019), there are also studies examining the relationships between teachers' 21st century teaching skills and their dedication to the profession (Kozikoğlu & Özcanlı, 2020), lifelong learning tendencies (Yalçın İncik, 2020). However, in the literature review carried out within the scope of this research, there are also studies that examine the predictive power of 21st century teacher skills (Eğmir & Çengelci, 2020) and learner skills in the context of smart social networks (Boholano, 2017).

On the one hand, among the researches on the axis of teacher autonomy, job satisfaction (Şentürken & Oğuz, 2020), job integration (Kavgacı & Çalık, 2017), perceived management styles of school administrators (Akçay & Sevinç, 2021), professional professionalism (Buyruk & Akbaş, 2021; Karatay, Günbey & Taş, 2020), school climate (Çolak, 2016), making participatory decision and perception control (Evans & Fischer, 1992) and teacher autonomy are examined. On the other hand, there are also publications, in which only the subject of teacher autonomy is the main research topic, in the context of the opinions of teachers in different branches (Canbolat, 2020; Friedman, 1999; Kılınç, Bozkurt, & İlhan, 2018; Üzüm, 2014). However, in the literature review conducted during the process of carrying out this research, no study was found that dealt with the concepts of 21st century teacher skills and teacher autonomy. This situation is considered to be an important indicator for the importance of the research. As it is a well-known fact, the phenomenon of teacher autonomy constitutes an important dimension in the processes of transferring and structuring the knowledge within the aforementioned skill set. In this context, it is vital to reveal the relationship between the 21st century teacher skills and the teacher in today's conditions, in which both the content and

the transfer of knowledge have extremely dynamic structures, and this situation constitutes the main problem of this research.

In this study, the relationship between teachers' 21st century teaching skills and their autonomy is tried to be revealed. In this context, answers to the following questions are sought.

What is the level of teachers' use of 21st century teaching skills?

What are the autonomy levels of teachers?

Is there a change in teachers' 21st century teaching skills and autonomy according to;

   their gender

   type of school (public/private)

   the level of education that they work,

   to their seniority,

Is there a significant relationship between teachers' 21st century teaching skills and their autonomy? If yes, what is the level of this relationship?

By the time the distribution of the participants in the research is examined, the number of female teachers is 180 (60.6%), while the number of male teachers is 117 (39.4%), while the number of teachers working in public schools is 155 (52.2%), and the number of teachers working in private schools is 142 (47.8%).

Method

This part presents information about the study group, data collection tools, research model and analysis of the collected data. In addition, all of the information regarding the analysis of the study with research and publication ethics is thoroughly presented.

Research Model

The present study, which was conducted to examine the relationship between teachers' 21st century teaching skills and their autonomy, was conducted in the relational model. In the relational screening model, the aim is to reveal the relationship between two or more variables (Karasar, 2003).

Universe/Sample/Study group

The data of the study were collected from 305 teachers working in private and public schools in Mersin in the spring term of 2021. The measurement tool forms of 8 participants who were thought to be coded incorrectly or left blank among the answers given to the measurement tool were excluded, and analyses were carried out with the data obtained from the remaining 297 participants. The distribution of the data by gender and institution variable is illustrated in Table 1.

Table 1 Distribution of Teachers Participating in The Research

		N	%
Gender	Female	180	60.6
	Male	117	39.4
Institution	State School	155	52.2
	Private School	142	47.8

Data Collection Tools

21st Century Teacher Skills Scale: The scale was developed by Orhan Göksün (2016) to measure the 21st century teacher skills of teachers. It consists of 27 5-point Likert-type items gathered under five factors: management skills, flexible teaching skills, techno pedagogical skills, affirmative skills, and productive skills. Reactions to scale items were "5- Always, 4- Usually, 3- Occasionally; 2- Rarely and 1-Never" respectively. The total explained variance of the scale was calculated as 40.33%, and the internal consistency coefficient was found as .870. Permission to use the scale was obtained from the author via e-mail.

Teacher Autonomy Scale: The Teacher Autonomy Scale is a 5-point Likert type measurement tool developed by Çolak (2016) to measure teachers' autonomy behaviors. Reactions to scale items, were "1- I strongly disagree; 2- I disagree; 3- I agree moderately; It is designed as 4- I agree and 5- I strongly agree" respectively. In scale; there are 4 sub-factors and 17 items under the name of curriculum autonomy, teaching process autonomy, professional communication autonomy and professional development autonomy. The internal consistency coefficient for the overall scale was calculated as .870. Permission to use the scale was obtained from the author via e-mail.

Data Collection and Analysis

Research data were collected online by researchers from teachers working in public and private schools in Mersin in 2021. Ethics committee approval was obtained from Mersin University Ethical Committee to conduct the study before research data were collected.

The data of the research were analyzed using the SPSS 23 Package program. Descriptive statistics t-test, ANOVA and correlation analysis were used in the research.

Findings

Information about the answers given by the participants to the items of the teacher competencies scale is given in Table 2. According to Table 2 in line with the average values of the answers given to the measurement tool by the teachers participating in the research, it is important to note down that they almost always treat their students with respect, ensure that their students respect individual differences and reinforce their students' positive behaviours. In addition, the average of the item "I warn my students during the lesson" was 2.62. It can be understood that the cases of resorting to expert support during the planning of out-of-class

educational and social activities along with the planning of the lesson process happen occasionally.

Table 2 Teacher efficacy scale items

	Items	N	x̄	σ
1	I treat my students with respect	297	4.83	.37
2	I organize educational activities outside the classroom.	297	3.42	.97
3	I organize social events outside of the classroom.	297	3.27	1.03
4	I make my students respect individual differences.	297	4.81	.42
5	I participate in professional development activities.	297	3.94	.90
6	I teach my students about new technologies.	297	4.20	.85
7	I share what I learned using digital tools.	297	4.08	.85
8	I follow the current developments related to my professional and duty responsibilities.	297	4.53	.56
9	I follow student progress files.	297	4.08	.92
10	I create opportunities for my students to generate new ideas.	297	4.51	.60
11	I get support from experts when planning my course process.	297	3.22	1.16
12	I give constructive feedback on my students' homework	297	4.47	.61
13	I prepare worksheets for my students	297	4.04	.93
14	I prepare original materials for my lessons.	297	3.95	.86
15	I keep records of my students' learning processes.	297	3.84	1.11
16	I create the classroom rules with my students.	297	4.28	.88
17	I support the development of my students' self-assessment skills.	297	4.51	.60
18	I reinforce my students' positive behaviors.	297	4.79	.42
19	I use technical terms when lecturing.	297	3.63	.95
20	I struggle so that my students might establish cause-effect relationships.	297	4.54	.58
21	I make alternative plans against the problems I will encounter in my in-class activities.	297	4.17	.75
22	I enable my students to reach their course achievements in the shortest way.	297	4.23	.70
23	I warn my students during the lesson	297	2.62	.86
24	I organize educational competitions among my students to reinforce their learning.	297	3.43	1.02
25	I benefit from the experience of my colleagues.	297	4.28	.73
26	I enrich teaching activities with technology.	297	4.19	.81
27	I encourage my colleagues to use technology in their lessons.	297	3.84	1.00

Information on the answers given by the participants to the items of the teacher autonomy scale is illustrated in Table 3. Examining the average responses of the participants to the scale items in Table 3, it is noteworthy to state that it ranges from 3.64 to 4.48. In line with the data in Table 3, it is possible to understand that the teachers mostly agree with the item about using different resources in addition to the textbook, and this response is followed by the item regarding the choice of teaching methods and techniques to be used in the lessons. In addition, it was revealed that teachers are moderately involved in identifying the appropriate time for the in-service training they will attend and in cases where the school administration interferes in communication with parents.

Table 3 Teacher autonomy scale items

	Items	N	$\bar{x}$	σ
1	I can decide which activities and how much time I will spend in the lessons for myself.	297	4.23	.83
2	I can rearrange the curriculum (in terms of subject, content, achievement, etc.) according to the needs of the students.	297	4.24	.78
3	I can choose the teaching methods and techniques that I will use in the lessons.	297	4.32	.67
4	I can decide on my own assessment and evaluation methods that I will use in my lessons.	297	4.19	.76
5	While planning the lesson, I can choose the subject according to the student's needs.	297	4.08	.88
6	I can make additions to the curriculum according to student needs.	297	4.21	.76
7	I can make reductions in the curriculum according to student needs.	297	3.89	.96
8	I can use different resources in addition to the textbook.	297	4.48	.70
9	I can include current topics that are not included in the curriculum in my lessons.	297	4.21	.85
10	I can assign students homework on the subjects I want.	297	3.92	.98
11	I can decide for myself how to reward students	297	4.27	.76
12	I can arrange the appropriate time for the in-service trainings I will attend.	297	3.64	1.12
13	I can decide which topics will be suitable for me in the in-service trainings I will attend on my own.	297	4.00	1.01
14	I can attend the scientific meetings I want related to my field.	297	4.01	.92
15	I can freely express my thoughts in the teachers' council.	297	4.27	.89
16	School management does not interfere with my communication with my colleagues.	297	4.07	.96
17	School management does not interfere with my communication with parents.	297	3.65	1.13

The average scores of the teachers participating in the study from the 21st Century Teacher Skills Scale and Teacher Autonomy scale along with its sub-dimensions are shown in Table 4.

Table 4 Descriptive Statistics on the Sub-Dimensions of the Scales

	Sub-Dimensions	N	x̄	σ
21st Century Teacher Skills Scale	Management Skills	297	4.22	.48
	Techno pedagogical Skills	297	3.77	.46
	Confirmatory Skills	297	4.81	.28
	Flexible Teaching Skills	297	3.34	.93
	Productive Skills	297	3.99	.76
	21st Century Teacher Skills Scale General	297	4.03	.43
Teacher Autonomy Scale	Autonomy of Teaching Process	297	4.18	.53
	Curriculum Autonomy	297	4.17	.59
	Professional Development Autonomy	297	3.88	.82
	Professional Communication Autonomy	297	3.99	.77
	Teacher Autonomy Scale	297	4.06	.50

When the average scores of the teachers regarding the sub-dimensions of the scales are examined, it is seen that the teachers received a score of (x̄= 4.03) from the 21st Century Teacher Skills Scale. Examining the sub-dimensions, they are at the level of management skills (x̄= 4.22), techno-pedagogical skills (x̄= 3.77), confirmatory skills (x̄= 4.81), flexible teaching skills (x̄ =3.34) and productive Skills (x̄ =3.99). It can be said that the teachers' scores from the overall scale and sub-dimensions are high. On the other hand, when the scores obtained from the Teacher Autonomy Scale are examined, it is seen that the teachers received points from the scale in general (x̄= 4.06). In the sub-dimensions, they scored teaching process autonomy (x̄= 4.18), curriculum autonomy (x̄= 4.17), professional development autonomy (x̄= 3.88) and professional communication autonomy (x̄= 3.99) respectively. It can be said that teachers' autonomy scores are at a high level. Furthermore, the t-test was applied to measure whether the scores obtained by the teachers from the 21st Century Teacher Skills Scale and the Teacher Autonomy Scale make a difference according to the gender variable. The results are presented in Table 5.

Table 5 T-test Results of 21st Century Teacher Skills and Teacher Autonomy Scale by Gender Variable

Scale	Gender	N	x̄	Sd	t	df	p
21st Century Teacher Skills Scale	Female	180	4.03	.40	.338	295	.736
	Male	117	4.02	.46			
Teacher Autonomy Scale	Female	180	4.04	.51	-.904	295	.367
	Male	117	4.09	.49			

*p<0.05

As it was shown in Table 5, t-test was conducted to measure whether the teachers' scores from the 21st Century Teacher Skills Scale made a significant difference according to the gender variable. According to the results obtained, the scores of female teachers ($\bar{x}$= 4.03) and the scores of male teachers ($\bar{x}$= 4.02) are very close to each other. The difference is not statistically significant. Hence, it is possible to note down that the gender variable did not make a significant difference in the 21st Century Teacher Skills of the teachers.

The t-test was applied to measure whether the teachers' scores from the Teacher Autonomy Scale created a significant difference in terms of gender variable. According to the results obtained, the scores of female teachers are ($\bar{x}$= 4.04) and the scores of male teachers are ($\bar{x}$= 4.09) respectively. It is possible to claim that the difference is not statistically significant, and the gender variable does not make a significant difference in teacher autonomy.

The t-test was applied to measure whether the school type variable studied creates a significant difference in the scores of the teachers in the 21st Century Teacher Skills and Teacher Autonomy Scales. The results obtained are presented in Table 6.

Table 6 T-test Results of the 21st Century Teacher Skills and Teacher Autonomy Scale by School Type Variable

Scale	Gender	N	$\bar{x}$	Sd	t	df	p
21st Century Teacher Skills Scale	State School	155	4.00	.40	-.873	295	.384
	Private School	142	4.05	.45			
Teacher Autonomy Scale	State School	155	4.10	.51	1400	295	.162
	Private School	142	4.01	.48			

*p<0.05

In line with the data in Table 6, the t-test results can be examined. The t-test was conducted to measure whether the scores obtained by the teachers from the 21st Century Teacher Skills Scale made a significant difference according to the school type variable. According to the obtained results, the scores of teachers working in public schools are ($\bar{x}$= 4.00) and the scores of teachers working in private schools are ($\bar{x}$= 4.05). The difference is not statistically significant. The school variable did not make a significant difference in teachers' 21st century teaching skills.

In addition, the t-test was applied to measure whether the scores obtained by the teachers from the Teacher Autonomy Scale created a significant difference in terms of the school variable. As a consequence of the results, it can be said that the scores of teachers working in public schools are ($\bar{x}$= 4.10), and the scores of teachers working in private schools are ($\bar{x}$= 4.01). The difference is not statistically significant, and the school variable that is examined does not make a significant difference in teacher autonomy.

Finally, to measure whether the level of study made a significant difference in the scores of the teachers in the 21st Century Teacher Skills and Teacher Autonomy Scales, ANOVA was applied. The results obtained are presented in Table 7.

Table 7 ANOVA Results of Teachers' 21st Century Teacher Skills and Teacher Autonomy Scores for the Working Level Variable

Scale	Working Place	N	x̄	sd	F	p	Significance
21st Century Teacher Skills Scale	Primary School	97	4.07				
	Elementary School	107	4.06		.080	.923	
	High School	93	4.04				
Teacher Autonomy Scale	Primary School	97	4.13	2-294			Primary School – High School
	Elementary School	107	4.04		7.277	.001*	Elementary School – High School
	High School	93	3.90				

*p<.05

As it is illustrated in Table 7, ANOVA was applied to measure whether the scores obtained by the teachers from the 21st Century Teacher Skills Scale made a significant difference in terms of the level variable. According to the results, the scores of the teachers working at the primary school level are (x̄= 4.07), the scores of the teachers working at the secondary school level are (x̄= 4.06), and the scores of the teachers working at the high school level are (x̄= 4.04) respectively. It is obvious that the difference is not statistically significant, and the variable of level did not make a significant difference in the 21st Century Teacher Skills of the teachers.

Considering the scores of the teachers from the Teacher Autonomy Scale in terms of the level of study, the scores of the teachers working at the primary school level are (x̄= 4.13), the scores of the teachers working at the secondary school level are (x̄=4.04), and the scores of the teachers working at the high school level are (x̄=3.90) respectively. For this item, the difference is statistically significant, $F_{(2-294)}$=7.277. Furthermore, the results of the Post Hoc test conducted to identify the source of the difference highlight the fact that the autonomy scores of high school teachers are significantly lower than those of teachers working at both secondary and primary school levels. Thus, it is probable to note down that the level of study made a significant difference in teacher autonomy.

Table 8 below shows the ANOVA results of the scores of the teachers participating in the research on the 21st century teacher skills scale and teacher autonomy scales in the context of the seniority variable.

As it is illustrated in Table 8, ANOVA was applied to measure whether the scores obtained by the teachers from the 21st Century Teacher Skills Scale made a significant difference in terms of the seniority variable or not. As a result of the analysis, it was revealed that the score of teachers with 0-5 years of seniority was (x̄= 3.96), the score of teachers with 6-10 years of seniority was (x̄= 4.06), the score of teachers with 11-15 years of seniority was (x̄= 4.04), the score of teachers with 16-20 years of seniority was (x̄= 3.99), and the score of teachers with 21

years and more seniority was ($\bar{x}$= 4.05) respectively. Therefore, the difference is not statistically significant. It is possible to assert the idea that the seniority variable did not make a significant difference in the 21st Century Teacher Skills of the teachers.

Table 8 ANOVA Results of 21st Century Teacher Skills and Teacher Autonomy Scores for Teachers' Seniority Variable

Scale	Seniority	N	$\bar{x}$	sd	F	p
21st Century Teacher Skills Scale	0-5 years	46	3.96		1.734	.142
	6-10 years	68	4.06			
	11-15 years	67	4.18			
	16-20 years	57	3.99			
	21 years and above	59	4.05	2-292		
Teacher Autonomy Scale	0-5 years	46	3.99			
	6-10 years	68	3.98			
	11-15 years	67	4.06		.808	.521
	16-20 years	57	4.00			
	21 years and above	59	4.09			

*p<0.05

In addition, ANOVA was applied to measure whether the teachers' scores from the Teacher Autonomy Scale made a significant difference in terms of seniority variable. The results of the analysis indicate that the score of teachers with 0-5 years of seniority was ($\bar{x}$= 3.99), the score of teachers with 6-10 years of seniority was ($\bar{x}$= 3.98), the score of teachers with 11-15 years of seniority was ($\bar{x}$= 4.06), the score of teachers with 16-20 years seniority was ($\bar{x}$= 4.00), and the score of teachers with a seniority of 21 years and above was ($\bar{x}$= 4.05). Hence, it can be said that the difference is not statistically significant, and the seniority variable did not make a significant difference in teacher autonomy of teachers.

As the final step, correlation analysis was conducted to measure to find out the possible relationship between teachers' 21st Century Teacher Skills and their autonomy behaviours. The results obtained are presented in Table 9.

Table 9 Correlation Between Scales and Sub-Dimensions of 21ˢᵗ Century Learner Skills and Teacher Autonomy

	1	2	3	4	5	6	7	8	9	10	11	x̄	σ
(1) MS	1											4.22	.47
(2) TPS	.585**	1										3.77	.46
(3) CS	.481**	.340**	1									4.81	.28
(4) FTS	.449**	.495**	.196**	1								3.34	.93
(5) PS	.555**	.435**	.217**	.331**	1							3.99	.76
(6) TPA	.180**	.059	.188**	.042	.155**	1						4.18	.53
(7) CA	.266**	.177**	.259**	.178**	.195**	.599**	1					4.17	.59
(8) PDA	.313**	.313**	.134**	.303**	.150**	.361**	.338**	1				3.88	.82
(9) PCA	.195**	.223**	.081	.223**	.035	.407**	.304**	.386**	1			3.99	.77
(10) 21ˢᵗ CS	.800**	.756**	.474**	.780**	.741**	.151**	.277**	.338**	.210**	1		4.03	.43
(11) TAS	.329**	.281**	.213**	.273**	.174**	.748**	.710**	.752**	.739**	.340**	1	4.06	.50

When the relationship between 21st Century Teacher Skills of Teachers and Teacher Autonomy was examined, it was determined that there was a positive relationship between the two variables (r=.340). It can be said that as teachers' autonomy behaviors increase, their 21st century teacher skills also increase.

When the relationship between the 21st Century Teacher Skills Scale sub-dimensions and the Teacher Autonomy Scale sub-dimensions was examined, positive relationship were found between Professional Development Autonomy and Managerial, Techno pedagogical and Flexible Teaching Skills. Similarly, positive relationship between Teaching Process Autonomy and Management, Confirmatory and Productive Skills; positive relationship between Curriculum Autonomy and Management, Techno-pedagogical, Confirmatory, Flexible Teaching and Productive Skills; positive relationship between Professional Development Autonomy and Productive Skills; positive relationship between Professional Communication Autonomy and Management Skills, Techno-pedagogical Skills and Flexible Teaching Skills was determined.

Results, Discussion and Implications

The present study focused on the relationship between 21st century teacher skills and autonomy by examining teachers' 21st century teacher skills and autonomy, according to gender, seniority, type of school and educational level.

According to the abovementioned results of the research, the overall score of the teachers in the 21st century teacher skills scale was found as ($\overline{x}$= 4.03). In other words, the answers given by the participant teachers to the questions of this scale were at the "Generally" level on average. On the other hand, in the context of the dimensions of the same scale, the highest average score was found as affirmative skills with ($\overline{x}$= 4.81), while the lowest average score was in flexible teacher skills with ($\overline{x}$= 3.34). The present finding leads to the conclusion that while the participants reported that they applied the affirmative skills almost all the time, they occasionally applied to the flexible teacher skills. Based on this finding, it can be deduced that teachers always treat their students with respect, ensure that their students respect individual differences and reinforce their positive behaviors. On the other hand, it can be deduced that the reason for the relatively low average score in flexible teacher skills is that teachers abstain from organizing both educational and social activities outside the classroom. In addition, based on the fact that the productive skills dimension is ($\overline{x}$= 3.99) points, it can be understood that teachers generally support their students' academic development by preparing worksheets and other original materials. In addition, these findings mean that teachers actively use 21st century teaching skills, in other words, teacher skills that can correspond to student needs in today's conditions. Regarding these findings, it is obvious that different results have been obtained in the related literature. To highlight, in some studies, the average score obtained for the overall scale is very close to the finding of this research (Certel, Bahadır, & Topuz, 2019; Kozikoğlu & Özcanlı, 2020; Tican & Deniz, 2019; Yalçın İncik, 2020). In the research, among the dimensions of the 21st century teacher skills scale, the highest average value was reported as between "usually" and "always", as pertaining to affirmative skills (Certel, Bahadır, & Topuz, 2019; Eğmir & Çengelci, 2020; Kozikoğlu & Özcanlı, 2020; Orhan Göksün, 2016; Yalçın İncik, 2020).

Considering the relationship between 21st Century Teacher Skills of Teachers and teacher autonomy, it was understood that there was a positive relationship between the two variables (r=.340). Therefore, as teachers' autonomy behaviors increase, their 21st century teacher skills also increase. Examining the relationship between the 21st century Teacher Skills Scale sub-dimensions and the Teacher Autonomy Scale sub-dimensions, positive relationships were found among professional development, autonomy, managerial, techno-pedagogical and flexible teaching skills. Likewise, there was a positive relationship between teaching process autonomy and administrative, consent and productive skills. Another positive relationship was found between curriculum autonomy, administrative, techno-pedagogical, approving, flexible teaching and productive skills. Furthermore, the other positive relationships were between professional development autonomy and productive skills. The last but not the least positive relationship was between professional communication autonomy and management, techno-pedagogical and flexible teaching skills.

Another finding of the study is that the scores of the teachers' 21st century teacher skills scale and its sub-dimensions do not differ statistically in terms of gender, school type, education level and seniority. It is clear that our steps proceed very much in the same way with the previous studies on the topic when the related literature is considered. In Yalçın İncik's (2020) study, the scores of teachers, who responded to the 21st century teacher skills scale, did not make a significant difference according to gender and seniority variables. A study in a similar vein, Eğmir and Çengelci (2020) reported that there was no significant difference according to the gender variable. On the other hand, in some studies of the literature, it is reported that the answers given to the 21st century teacher skills scale create significant differences in the context of some variables of which relationships are to be measured. Some studies suggest that these skills differ according to the variables of seniority and education level (Eğmir & Çengelci, 2020; Kozikoğlu & Özcanlı, 2020). It was also revealed in another study that the answers of the teachers, who want to complete postgraduate education, are statistically significantly higher than other teachers to the 21st century skills scale (Kozikoğlu & Özcanlı, 2020).

According to another main finding of the study, teachers generally answered the items about their autonomy with the option of "agree" ($\overline{X}$=4.06). The response averages given to the sub-dimensions of the scale are close to this level, and they have similar average scores. Considering the numbers, the order of the sub-dimensions of the autonomy scale was teaching process autonomy ($\overline{X}$= 4.18), curriculum autonomy ($\overline{X}$= 4.17), professional communication autonomy ($\overline{X}$= 3.99) and professional development autonomy ($\overline{X}$= 3.88) from the highest to the lowest according to the mean score value, respectively. When this finding is compared with the literature, it is seen that the results are on a similar level. According to the results of many studies, the level of teacher autonomy is high (Akçay & Sevinç, 2021; Buyruk & Akbaş, 2021; Çolak, 2016; Karatay, Günbey & Taş, 2020). However, the general average score of teacher autonomy is reported as above medium in some studies (Şentürken & Oğuz, 2020)

In the present study, it was found that teacher autonomy differs significantly according to the variable of education level. Accordingly, the autonomy scores of high school teachers were significantly lower than teachers working in both primary and secondary schools. This situation might shed light onto the fact that high school teachers have more limited scope of action in terms of curriculum autonomy, professional development and professional communication autonomy compared to primary and secondary school teachers.

It was revealed that teacher autonomy was statistically significantly lower in high school teachers compared to primary and secondary school teachers, while there was no significant difference according to gender, seniority and the type of school they worked at. Taking the related literature into consideration, in line with the findings of this study, gender does not make a significant difference in teacher autonomy (Buyruk & Akbaş, 2021; Karatay, Günbey & Taş, 2020). There are even studies in which no significant difference can be found according to gender, type of school, weekly course load and educational status (Çolak, 2016). However, it has been reported that teacher autonomy differs significantly according to seniority (Karatay, Günbey & Taş, 2020).

Findings also highlight a relationship between autonomy and 21st century teaching skills. There is a positive and significant relationship (r=.340) between teachers' 21st century teaching skills and their autonomy. This situation might be interpreted as an increase in teacher autonomy level may increase the skills of the 21st century teacher.

Considering current conditions, the moment we are about to complete in the first quarter of the twenty-first century, teacher competencies and qualifications in the context of education are important for both students and teachers. In this context, necessary analyses and in-service training activities that can have positive effects on teachers should be made in educational institutions affiliated to the Ministry of National Education in certain periods in order to develop and increase the use of 21st century teacher skills. Thus, the quality of education can be organized in the short term. In addition, positive effects might be created on teachers and students in terms of pre-service activities by establishing university collaborations to support the education programs of higher education institutions that train teachers to obtain 21st century teacher skills. As one of the results of this research, high school teachers might be supported in this way by carrying out school-based professional development activities in that the autonomy levels of high school teachers are significantly lower than those of primary and secondary school teachers.

As a result, it is significant to underline the fact that this research was carried out using data obtained from teachers according to education levels. Possible contributions to the field might be made by carrying out new researches to include the branches of teachers in a way that will be expanded to the vocational education dimension. The present research was carried out by using quantitative data collection tools, and in new researches on this subject, qualitative methods might be used to contribute to the field in a different way. In that sense, the results will shed light onto more areas related to 21st century skills of teachers and teacher autonomy. Finally, it is evaluated that important scientific contributions can be made in different aspects by comparing the results obtained by measuring 21st century skills in the context of students and the results obtained from the teacher autonomy scale.

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