Teachers' Self-Efficacy Perceptions Regarding In-Class Effective Communication and Teaching 21st Century Skills

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Abstract: Problem-solving and effective communication skills become prominent in today's educational policies and shape educational practices. This study aims to examine primary school teachers' self-efficacy perceptions regarding in-class effective communication skills and teaching 21st century skills. The study is correlational research in the quantitative research method. 132 primary school teachers formed the study group. The data were collected through three different tools (Demographic Information Form, In-Class Effective Communication Skills Perception Scale-ICECSPS, and Teaching 21st Century Skills Scale), the Spearman-Brown correlation analysis was used in the analysis. The findings showed that as the number of classrooms in the school increases, the correlation between teachers' ICECSPS scores and teaching 21st century skills scores was not significant; on the other hand, classroom size was an important predictive in teachers' 21st century skills and teamwork.

Keyword: Teachers' Self-Efficacy

Introduction

Inclusive education, based on effective and quality teaching, enables students with special needs to benefit from equal educational opportunities with their peers. Regulations based on equal opportunities aim for disabled groups to be active individuals in society (Stojik, 2009). Inclusive education focuses on the individual differences of each student, whether they need special education or not. Regulations such as physical environment, teaching methods, or curriculum aim to adapt the school to the student rather than the adaptation of the student to the school (Salend, 2001). In this process, classroom teachers who are at the center of education services spend most of their time with students. Accordingly, they are the ones who know and observe children best, and it is important for teachers to plan quality education services appropriate for the learning needs of students with individual differences. For educational policies to meet the requirements of the age, education and training services must meet the educational needs of every student in the classroom (Diken & Batu, 2020; Friend & Bursuck, 2006).

Teachers have a great role in successfully implementing education and training services in classrooms. Teachers are expected to have effective communication skills and create a positive classroom climate for students with individual differences. Only teachers with effective communication skills can create a positive learning environment. Effective communication skills are also effective in increasing students' motivation and success of learning outcomes (Duta et al., 2015; Morreale et al., 2014). Effective communication skills include expressing new ideas, feelings, thoughts, and information verbally or non-verbally, as well as influencing the listener by the message sent (East, 2015). Wilkins et al. (2015) drew attention to the relationship of effective communication skills with important characteristics such as social interaction, knowledge, skills, motivation, and attitude. Thus, teachers must provide educational services by paying attention to students' abilities and interests with their effective communication skills. Teachers use

different strategies while providing new knowledge and skills. They benefit from effective communication in this process (Detlef & Prozesky, 2010; Rosenbaun, 2012). Besides, the quality of education increases by using effective communication skills to convey ideas, feelings, and thoughts to students through different methods. According to Farrell (2009), teachers use communication skills for three purposes which are gaining information about students, responding to students, and creating shared in-class experiences in their classrooms. Thus, they use a multi-directional approach by deciding on the most effective educational services and learning opportunities. Teachers with strong communication skills can make innovative practices by focusing on more than one characteristic of the learners. Consequently, these skills contribute not only to the students but also to the execution of effective teaching services.

Today, 21st century skills and effective communication skills are of great importance in terms of education and training. The 21st century is an age that requires every individual to have multiple skills to cope with competition. Different methods are implemented for students in the schools where 21st century skills are prominent. Teachers must aim at critical thinking, collaboration, communication, and creativity skills and follow technological developments, especially in the education of students with individual differences (Partnership for 21st Century Skills, 2019; Rosyada, 2017). The National Education Association (NEA) reported that institutions that provide educational services and other institutions must include four components which are critical thinking and problem solving, communication, collaboration, and creativity regarding 21st century skills. Technological developments and scientific innovations have an important place in the individual's preparation for life and participation in society (Stewart, 2010). These skills are defined as 21st century skills. In our current century, it covers the skills that individuals need in many areas of life such as education, work, and social life. Partnership for 21st Century Skills (P21, Partnership for 21st Century Learning, 2019), which becomes prominent in the literature with its studies on this subject, addresses 21st century skills under three categories. These are a) *Learning and Innovation Category:* They include critical thinking, problem-solving, creative thinking and innovation, communication, and collaboration, b) *Life and Career Category:* They include flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity, leadership, and responsibility skills, c) *Information, Media and Technology Category:* They include information literacy, media, and information and communication technology literacy skills (Liesa-Orús, et al., 2020; Szabo, et al., 2020). As seen in the literature, 21st century skills that are multidirectional and comprehensive are defined in different ways. These skills were defined as acting independently, using technological tools, and communicating with different groups by OECD (2005). Adamson et al. (2015) reported 21st century skills as lifelong learning, problem-solving, self-direction, and collaborative teamwork. It is of great importance for teachers to have these skills in terms of providing quality education and training services. Because teachers who have acquired these skills create effects that facilitate teaching. Besides, the acquisition of these skills by students has an important place in where to use the information and what to uniquely do with what they have learned (González-Pérez & Ramírez-Montoya, 2022). Students need to use 21st century skills to be able to keep up with the globalizing world conditions, make sense of the environment where they live, analyze, determine the needs of society, access information quickly, and think innovatively. These skills create a basis for lifelong learning and development. Teachers and students constantly renew themselves and can adapt to the changing conditions with 21st century skills (Uçak & Erdem, 2020). Thus, in the acquisition of these skills, teachers need to make some adaptations in effective communication, environment, material, and teaching plans for effective education and training services. In a sense, effective teaching environments are areas where teachers and students interact, gain different experiences, collaborate, and provide feedback (Hasırcı, 2018). It is seen that individuals with 21st century skills make the right decisions and constantly renew their development for full participation in social life. In brief, to keep

up with the changing and developing world, individuals need 21st century skills to access information quickly, use this information in their daily lives, and have a place in society as productive individuals.

Teachers' beliefs about their capacity to influence their all students in a desired way, whether they have individual differences or not, are defined as self-efficacy (Berkant & Ekici, 2007). Teachers with 21st century skills have high self-efficacy beliefs. Miller et al. (2017) stated that in classroom management, teachers with high self-efficacy beliefs have characteristics that encourage students' independence, identify problem behaviors in the classroom and develop desired behaviors, increase motivation in teaching activities, are open to innovations in the education program, and diversify teaching methods. It is also stated that teachers who do not have high self-efficacy have characteristics that are unable to cope with problem behaviors in classroom management, need external support in the development of teaching methods, have difficulty in achieving determined goals, have problems in communication, self-confidence, and motivation (Cho & Shim, 2013). Teachers' self-efficacy is addressed in various ways in the literature (Bumen, 2010; Cho & Shim, 2013). There is a correlation between teachers' self-efficacy beliefs especially in the field of education. These appear in different ways such as academic success, interpersonal effective communication, time management, professional development, adaptation to today's world, and coping with problem behaviors (Bumen, 2010). It is seen that teachers' self-efficacy regarding 21st century skills are evaluated according to variables such as gender, educational status, and professional seniority in some studies conducted in the literature (Cemaloğlu, 2019; Mete, 2021). Besides, it is seen that there are studies on teaching and assessment of 21st century skills (Charland, 2014; Hixson et al., 2012). Boe (2013) examined what teachers do to adapt 21st century skills to lessons; Abualrob (2019) examined teachers' perceptions on this subject. Our study is a study based on the examination of the relationship between the self-efficacy of teachers working in inclusive education environments regarding 21st century skills and effective communication skills. In this sense, it is thought to be able to contribute to the literature.

For inclusive education services to be successful, teachers must benefit from in-class communication, information, and support services at the highest level. It is thought that especially 21st century skills have important impacts on students' acquisition of skills such as problem-solving, lifelong learning, collaboration, and self-direction. Thus, this study is thought to be important since it addresses the impact of teachers' self-efficacy perceptions regarding effective communication skills and teaching 21st century skills in classroom environments where education and training services are expected to be implemented with an inclusive perspective based on individual differences. In conclusion, the problem of this study is that every individual, regardless of their characteristics, deserves education that they can progress at their own pace and is appropriate for learning characteristics to which they feel they belong; teachers' inclusive roles are related to their communication skills and 21st century skills. In classrooms where educators with inclusive teacher roles, every student's full participation in education is provided and they can benefit from education and training. Our study, based on this importance, aims to examine self-efficacy perceptions regarding in-class effective communication skills and teaching 21st century skills of teachers who work in inclusive classrooms.

Method

In the study, the relationship between self-efficacy perceptions regarding in-class effective communication skills and teaching 21st century skills of teachers who work in inclusive classrooms was examined. For this purpose, the study was designed as a

correlational study in the quantitative research method. Correlational studies are based on the relationship between two or more variables and examine this relationship without any intervention to these variables. These study results may give an idea that there may be a cause-and-effect relationship, however, they cannot be interpreted as cause and effect regarding variables (Büyüköztürk et al., 2010). The sample of this study in the survey model in quantitative research method consisted of teachers who teach 1-2-3-4th grades in primary school and have students with special needs in their classrooms and voluntarily participated in the study.

Data Collection Instruments

We utilized three data collection instruments in our study. The first of them was the "Demographic Information Form" and the others were the In-Class Effective Communication Skills Perception Scale-ICECSPS, and the Teaching 21st Century Skills Scale Turkish Form. Permission for the use of scales was received by the researchers through written e-mails by taking into account the ethical process for permission for the use of data collection instruments. In the Demographic Information Form, the participants were asked about the independent variables of gender, professional seniority, educational status, classroom size, grade level they teach, the number of classrooms related to the grade level they teach in their school, the number of students with special needs in their classrooms, whether they attended effective communication course.

In-Class Effective Communication Skills Perception Scale (ICECSPS)

The data regarding the participants' perceptions regarding in-class effective communication skills were received through the data collection instrument developed by Gülbahar and Aksungur (2018). It is stated that in the first step of the development of the data collection instrument, 5-point Likert-type expressions were applied to a participant group of 250 people and the Exploratory Factor Analysis was conducted, the results of CFA Confirmatory Factor Analysis were calculated by applying it to a different teacher group consisting of 235 people. The validity and reliability findings show that the scale is a reliable instrument for measuring perceptions regarding effective communication skills. In the instrument that consists of 4 sub-factors, 23 items are clustered under *Effective Speaking, Active Listening, Empathy, and Effective Use of Body Language.* The expressions in the scale are coded on a scale of 1-5 and vary between 1 (never) and 5 (always). In the scale that does not include reverse-coded items, the total score varies between 23-115. It is concluded that in-class effective communication perception levels of teachers who achieved high scores in the data collection tool are high (Gülbahar & Aksungur, 2018).

Teaching 21st Century Skills Scale

The teaching 21st Century Skills Scale developed by Jia, Oh, Sibuma, LaBanca, and Lorentson (2016) was developed to measure self-efficacy perceptions regarding teaching 21st century skills. The data obtained from 233 participants were included in the adaptation study. It consists of 10 items and 3 factors. The factor of Benefits of Technology consists of 3 items (1st, 4th, and 10th items), the second factor Collaboration consists of 3 items (2nd, 3rd, and 9th items), and Factor 3, Innovation and Problem Solving, consists of 5th, 6th, 7th, and 8th items. The scores vary between 7 (Completely Competent), and 1 (Not at All Competent) on a 7-point Likert scale. There were no reverse-coded items (Özyurt, 2020).

Process

The researchers transferred three separate forms which were ready to be answered into an online environment after obtaining the permissions. The pilot scheme was carried out with 2 teacher participants who were not in the study group. They tested the implementation of the forms in terms of the criteria of online access to the scale, comprehensibility, and allowance to respond. The researchers prepared an information text. In this section, they informed the participants about the study's name, purpose, permissions, and team. In the information consent form, it was stated that the mean duration to answer was 5-10 minutes, there were no correct and/or wrong answers to the questions on the form. Participants were informed about the scoring in the tools that would be answered in writing. The researchers explained in writing that participating in the study was completely voluntary. Before they started to answer data collection tools, the participants read that they had the right not to participate in the study or to withdraw at any time after participation. The prerequisite for participating in the study was to read and approve the statement: *"I reviewed the invitation to participate in the study in the online environment and read information about the purpose of the study, duration given to answer data collection tools and ethical committee permissions, I agree to answer the items in the relevant forms by voluntarily participating in the study. Information about the principles I should pay attention to and about my rights are included.* The data were collected between November 2023 and February 2024.

Study Group

The study group of the study consisted of 132 teachers who work in inclusive education classrooms. The data of the study were collected from the teacher candidates in the study group with online scales with the ethical committee permission of XX University no. XX through In-Class Effective Communication Skills Perception Scale and Teaching 21st Century Self-Efficacy Perception Scales. In the study group where the mean age of the teachers was $\bar{X} = 40.71$, it was found that the number of teachers at the age of 46 was the highest compared to other ages. The study group consisted of 37.9% (50) male and 62.1% (82) female teachers. Figure 1 shows the professional seniority and educational levels of teachers in the study group.

Figure 1.
Graduation Levels of the Teachers According to their Professional Seniority.

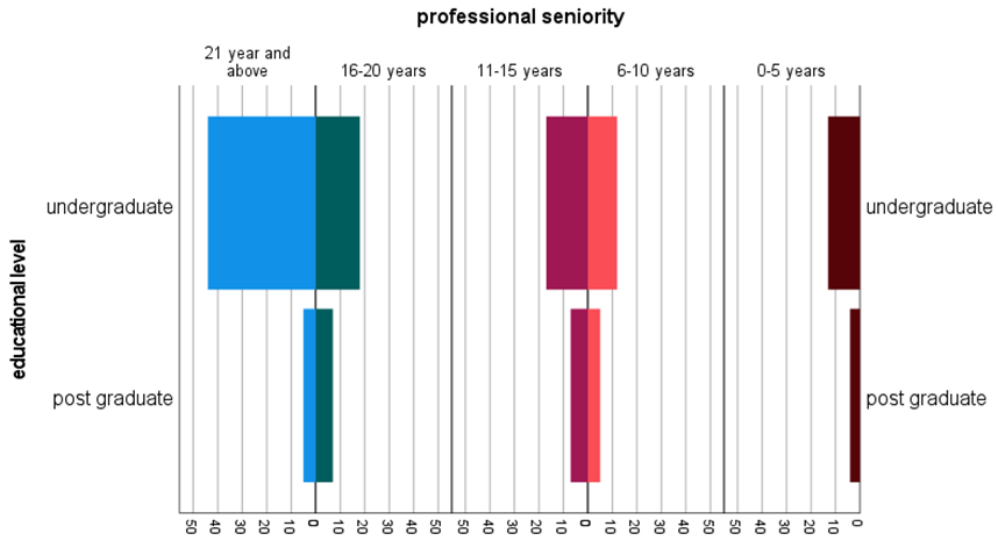
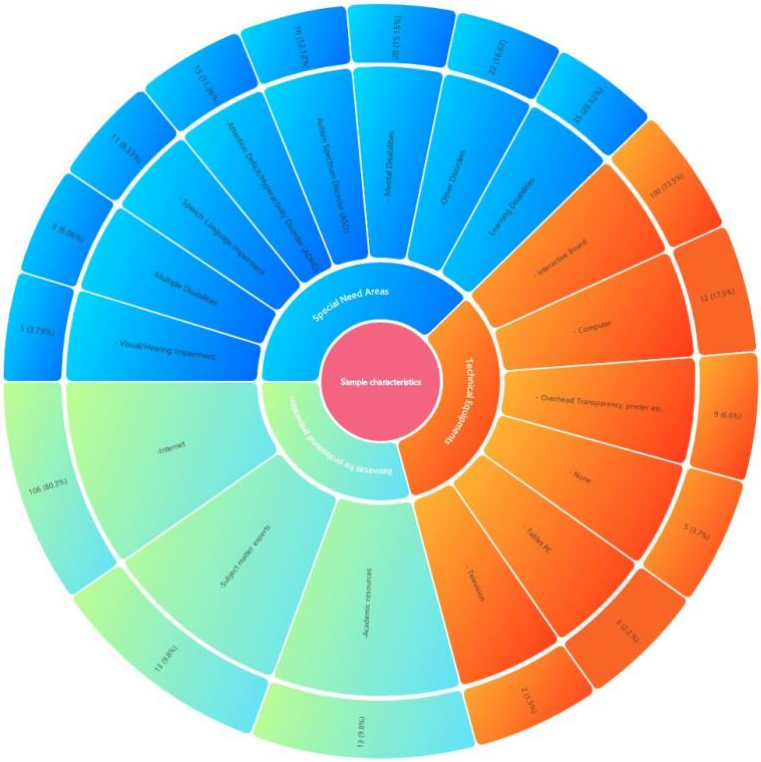


Figure 2.
Sample Characteristics.



As shown in Figure 1, a great majority of the teachers hold bachelor's degrees. Especially the master's degree rates of teachers with high professional seniority are low compared to other professional seniority levels. The master's degree graduation rate of teachers with an experience of 20 years and lower is higher compared to those with an experience of 21 years and above. When examining Sample Characteristics in Figure 2, it is seen that the majority of the students in teachers' classrooms had Learning Disability (26,52%). Learning disability is followed by Other Disorders with a rate of 16.67% and Mental Disabilities with a rate of 15.15%. Besides, the rate of students with Autism Spectrum Disorders (12.12%) and Attention Deficit/Hyperactivity Disorder (11.36%) is notably close. The lowest rate belongs to students with Visual/Hearing Impairment (3.79%). As for technical equipment, most classrooms have an Interactive Board (73.5%). The most frequently found technical equipment after Interactive Board is computers with a rate of 17.5%. The least frequently found equipment in the classrooms is television. Another remarkable finding is that there is no technical equipment in 3.7% of the classrooms. It was found that the most frequently applied source of professional development is the Internet with a rate of 80.3%. It was seen that they applied to academic resources and Subject Matter Experts at the same rate (9.8%).

Data Analysis (Preliminary Statistics)

In line with the purpose of the study, firstly, the contribution of the scores of both scales was examined within the scope of independent variables of the study (gender, professional seniority, classroom size, grade level, number of classrooms they teach, educational status, number of students with special needs in the classroom, and attending to effective communication course). First, the missing data for both ICECSPS and the Teaching 21st Century Skills Scale were examined. No missing data were found in the data set. After determining that there were no missing data, the extreme values in the data set were examined. The scores on both scales were converted to z scores and data outside the ±3 range (Mertler & Vannatta, 2016) were removed from the data set. It

was seen that there was only one extreme value in ICECSPS and it was removed from the data set. Descriptive statistics and normality tests regarding the scale scores were examined and given in Appendix 1. When examining the descriptive statistics given in Table 2 and Table 3 in Appendix-1, it can be said that ICECSPS scores show normal distribution in *gender, number of students with special needs in the classroom, and attending to effective communication course*s since the scores have single mod value and their skewness and kurtosis coefficient is between ±2 (George & Mallery, 2010). Besides, the fact that number of the individuals in some categories of *classroom size* and *educational level* variables is less than 30 (Cohen et al., 2000; Hogg et al., 2015) required using non-parametric methods in the analysis of these variables. It can be said that ICECSPS scores showed abnormal distribution as the scores have more than one mod in categories related to *professional seniority, grade level, and number of classrooms they teach* variables. When examining descriptive statistics for Teaching 21st Century Skills scores given in Appendix 1, it can be said that the scale scores show abnormal distribution in the categories related to the independent variables of the study as they have more than one mod. Thus, Spearman-Brown correlation analysis, one of the non-parametric statistics, was used to examine relationships between ICECSPS scores and Teaching 21st Century Skills Scale scores. Since the correlation coefficient also gives the effect size, the effect size was not calculated separately. Cohen's (1988) effect size ranges were used for interpreting the effect size. According to Cohen (1988), 0,10 is interpreted as a weak effect, 0,30 is interpreted as a moderate effect, and 0,50 and above is interpreted as a strong effect.

Findings

The result of the correlation analysis conducted to examine the relationship between ICECSPS scores and Teaching 21st Century Skills Scale scores within the scope of independent variables of the study is shown in Table 1.

Table 1.
Relationship between ICECSPS scores and Teaching 21st Century Skills scores.

	Categories	N	Spearman Rho	p	R^2
Gender	Male	50	0,612	0,000**	0,38
	Female	82	0,562	0,000**	0,32
Professional Seniority	between 0-5 years	17	0,566	0,018*	0,32
	between 6-10 years	17	0,396	0,116	0,16
	between 11-15 years	24	0,559	0,004**	0,31
	between 16-20	25	0,560	0,004**	0,31
	21 years and above	49	0,583	0,000**	0,34
Classroom size	10-20 students	26	0,531	0,005**	0,28
	21-30 students	62	0,588	0,000**	0,350,35
	31-40 students	33	0,492	0,004**	0,24
	more than 40	11	0,360	0,278	0,13
Grade Level	1st grade	32	0,514	0,003**	0,27
	2nd grade	27	0,430	0,025*	0,19
	3rd grade	34	0,609	0,000**	0,37
	4th grade	39	0,597	0,000**	0,36
Number of classrooms they teach	Single classroom	29	0,230	0,230	0,05
	Two classrooms	17	0,452	0,069	0,20
	Three classrooms and more	86	0,599	0,000**	0,36
Educational level	Undergraduate	104	0,554	0,000**	0,31
	Master's Degree	28	0,526	0,004**	0,28
Number of students with special needs in the classroom	One student	78	0,644	0,000**	0,42
	Two students	53	0,406	0,003**	0,17
Attending to effective communication course	Yes	51	0,475	0,001**	0,23
	No	80	0,619	0,000**	0,38

Note: * p<0.05; **p<0.01

When examining the correlation analysis results given in Table 1, the following results were obtained:

- A positive and significant relationship was found at a moderate level (Hinkle et al., 2003) between ICECSPS scores and Teaching 21st Century Skills scores both for males (r=0,612) and females (r=562). The square of the correlation coefficient gives the explained variance. Accordingly, it can be said that 38% of male participants' perceptions regarding in-class effective communication skills and 32% of female participants' perceptions are explained by Teaching 21st Century Skills. The correlation coefficient itself can also be interpreted as the effect size. Since the correlation coefficient was higher than 0,50 for both male and female participants, it can be said that a strong level of effect size was reached according to Cohen (1988).
- When examining the relationship between ICECSPS scores and Teaching 21st Century Skills scores; while this relationship was found to be insignificant in the group with 0-5 years of professional seniority, the relationships were found to be at a positive moderate level (Hinkle et al., 2003) and significant in all other seniority levels. It was seen that this relationship increases as the professional seniority increases. It was concluded that in the situation where the professional seniority was 21 years and above, which includes the highest explained variance, 34% of perceptions regarding in-class effective communication were explained with Teaching 21st Century Skills. Similarly, the strongest effect (0,583) was reached in the situation where professional seniority was 21 years and above (Cohen, 1988).
- A positive and significant relationship was found at a moderate level (Hinkle et al., 2003) between ICECSPS scores and Teaching 21st Century Skills scores in the situations where the classroom sizes were between 10-20 students and 21-30 students. It was seen that this relationship decreased as the classroom size enlarged and turned out to be insignificant in the most crowded classroom size (more than 40) (r=0,360; p>0,05). The classroom size where the explained variance is the highest was the classroom size with 21-30 students and 35% of perceptions regarding in-class effective communication skills were explained with Teaching 21st Century Skills. Similarly, the strongest effect (0,588) was reached in the situation where classroom size was 21-30 students (Cohen, 1988).
- It was seen that the relationship between ICECSPCS scores and Teaching 21st Century Skills scores was statistically significant in all grade levels. However, it was seen that this relationship was at a low level (r=0,430) in the 2nd grade level (Hinkle et al., 2003). The grade level where the explained variance was highest was the 3rd grade and 37% of perceptions regarding in-class effective communication skills were explained with Teaching 21st Century Skills. Similarly, the strongest effect (0,609) (Cohen, 1988) was reached in the situation where the grade level was 3rd grade.
- There was no significant relationship between ICECSPS scores and Teaching 21st Century Skills scores when the number of classrooms they teach was one or two. Besides, as the number of classrooms increased, this relationship increased and this relationship turned into significant when the number of classrooms was three and above (r=0,599; p<0,01). The grade level where the explained variance was highest was the 3rd grade and 37% of perceptions regarding in-class effective communication skills were explained with Teaching 21st Century Skills. Similarly, the strongest effect (0,609) (Cohen, 1988) was reached in the situation where the grade level was 3rd grade.
- It was seen that the relationship between ICECSPS scores and Teaching 21st Century Skills scores was positive and significant at a moderate level (Hinkle et al., 2003) in both educational levels. The educational level where the explained variance was highest was undergraduate and 31% of perceptions regarding in-class effective communication skills were explained with 21st Century Skills. Similarly, the strongest

effect (0,554) was reached (Cohen, 1988) in the situation where the educational level was undergraduate.

- In the situation where the number of students with special needs in the classroom was one, the relationship between ICECSPS scores and Teaching 21st Century Skills scores was found to be positive and significant at a moderate level (Hinkle et al., 2003). However, this relationship was found positive and significant at a low level (Hinkle et al., 2003) when the number of students with special needs in the classroom was two. The situation where the explained variance was the highest was the situation where the number of students with special needs in the classroom was single and it was concluded that in this group, 42% of perceptions regarding in-class effective communication skills were explained with Teaching 21st Century Skills. Similarly, the strongest effect (0,554) (Cohen, 1988) was reached in the situation where the number of students with special needs in the classroom was single.
- While it was found that the relationship between ICECSPS scores and Teaching 21st Century Skills scores of teachers who attended effective communication skills courses was positive and significant at a low level (Hinkle et al., 2003), this relationship (0,619) was found to be positive and significant at a moderate level (Hinkle et al., 2003) in the group who did not attend this course. The situation where the explained variance was highest was the situation in which there were those who did not attend an effective communication course and 38% of perceptions regarding in-class effective communication skills were explained by Teaching 21st Century Skills. Similarly, the strongest effect (0,619) was reached (Cohen, 1988) in the group that did not attend an effective communication course.

Discussion and Results

In this study, perceptions regarding in-class effective communication skills and self-efficacy perceptions regarding teaching 21st century skills of teachers who work in inclusive classrooms were examined. 21st century skills and in-class effective communication skills are of critical importance for teachers to successfully educate students and be successful in their future lives. The findings showed that there was no significant difference between classroom teachers' perceptions regarding in-class effective communication skills and self-efficacy perceptions regarding teaching 21st century skills according to gender. It was found that ICECSPS scores of all teachers increased as the teaching 21st century skills scores increased. These results are supported by the results of the studies conducted by Coşanay, Karalı, 2022; Gonzales, 2020; Kıyasoğlu & Çeviker Ay, 2020; Kıyasoğlu & Karabekmez, 2022; Özer & Kuloğlu, 2023 in the literature. The need for teachers' communication and effective teaching skills is independent of their gender. Every teacher, male and female, is expected to acquire professional ethical rules according to the policy principles that prevent gender-based discrimination for equal opportunities, which is one of the most important principles of the education system. Featherstone (2007) stated that teachers' experiences based on the principle of equality are important in terms of competencies that will shape their own lives. The fact that there was no significant difference between the scores of communications and teaching 21st century skills according to gender suggests that all teachers who participated in our study received education based on the policies to fight gender-based discrimination in education. It is also assumed that they work within the framework of this principle.

Another finding is that there is a significant relationship between ICECSPS scores and Teaching 21st Century Skills scores as the professional seniority of teachers increases. While the relationship between perceptions regarding in-class effective communication skills and self-efficacy perceptions regarding teaching 21st century skills of teachers with a professional seniority of 0-5 years is not significant, it was found that the relationship

between the scores of teachers with other professional seniorities is significant. Thus, it can be thought that teachers perceive themselves as more effective and have higher self-efficacy in in-class communication as their professional seniority increases. This finding is supported by the literature (Putman, 2012; Tschannen-Moran & Woolfolk Hoy, 2007). Bandura (1986, 1997) defined self-efficacy as "individuals' judgments regarding their capabilities to organize and execute the courses of action required to achieve specific performances". Self-efficacy can be defined as individuals' beliefs in their capabilities to plan and execute actions (Skaalvik & Skaalvik, 2007). Bandura (1986) associated the development of self-efficacy with four principal sources: mastery experiences, indirect experiences, social persuasions, and physiological factors. Darling-Hammond & Hyler (2020) drew attention to experience and stated that experienced teachers develop a set of skills and knowledge thanks to their years of teaching experience. Thus, it is important for teachers to acquire professional experience to achieve these competencies, and the seniority-based effect of professional experience was revealed in our study. Another remarkable result is that the relationship between teachers' scores they obtained from both scales was significant at a moderate level in the situations where the classroom size was 10-20 students and 21-30 students. As the classroom size increases, both teaching 21st century skills self-efficacy scores and in-class effective communication skills scores of teachers decrease. Thus, classroom size is a highly important variable for teachers to effectively communicate with their students in inclusive education environments. Accordingly, it is of critical importance that the classroom size should be sufficient to allow interaction with each student for teachers to apply their competencies in their classrooms. Besides, another variable that is directly related to this finding is the number of students with special needs. Teachers are responsible for making instructional adaptations for students with special needs in their classrooms who have developmental differences compared to their peers. Thus, teachers need sufficient time and material to be able to plan and implement teaching and work with their students as they need to be able to provide quality education for students with special needs, like each student in the classroom. While the number of students with special needs in the classroom was one, the relationship was positive and significant at a moderate level, while this relationship was positive and significant at a low level when the number of students with special needs in the classroom was two. It is understood that teachers' perceptions regarding in-class effective communication skills and self-efficacy perceptions regarding teaching 21st century skills are affected by both classroom size and the number of students with special needs in the classroom. Regarding this issue, the Ministry of National Education Regulation on Special Education Services (MEB, 2018) stated in Article 23 that the number of students with special needs who attend inclusive education environments with their peers with typical development should be distributed equally in each classroom and the number of students with special needs in these classrooms should not exceed 2 students. The fact that teachers make learning arrangements and adaptations to meet the needs of each student in their classrooms is the most important component of the quality education process in inclusive classrooms (Francisco et al., 2020; Lee et al., 2010). A study conducted by Soukup et al. (2007) showed that physical arrangements of the classroom affect students' access to the general education curriculum. Accordingly, students who study with smaller groups or individually with teachers have more access to education.

The findings of the study showed that teachers who work in the third (3rd) grade or upper grades see themselves more competent in terms of 21st century skills. One of the most important reasons for this situation may be that teachers acquire experience in working with students and obtain more in-depth information about their individual characteristics. Teachers might have felt more competent in effective teaching as they knew their students better. Besides, there was no significant relationship between ICECSPS scores and Teaching 21st Century Skills scores when the number of classrooms they teach was one or two. However, if the number of classrooms in the school is three (3) or more, the

relationship between teachers' ICECSPS scores and Teaching 21st Century Skills scores was found to be significant. It can be thought that teachers who work in schools with three (3) or more classrooms might have regularly organized meetings in which they participated together, and their professional sharing opportunities may be effective. Professional sharing of teachers who work in the same grade levels with similar responsibilities might have contributed to each other's knowledge and skills. This issue also has a legal basis (MEB-Ministry of National Education Directive on Educational Institutions and Groups, 2019). Teachers might have provided professional sharing and shared their experiences on in-class effective teaching and classroom management in the meetings. When the number of classrooms teachers teach in the schools where they work is only one, their self-evaluation processes may not be objective. However, teachers' evaluation system should be clear, and objective and feedback should be provided as a result (Al Maktoum & Al Kaabi, 2024; Göksoy & Yenipınar, 2015; Wei et al., 2023). The relationship between teachers' ICECSPS scores and Teaching 21st Century Skills scores was found to be positive and significant at a moderate level according to undergraduate or postgraduate status. The educational level where the explained variance was highest was the undergraduate level. This result can be explained as teachers acquired these skills during their undergraduate education. In a sense, effective communication and 21st century skills are among the principal competencies that are aimed to be provided to members of the profession at the undergraduate level. Besides, while the relationship between ICECSPS scores and Teaching 21st Century skills scores of teachers who attended to effective communication skills courses was positive and significant at a low level, this relationship was found to be positive and significant at a moderate level in the group that did not receive these courses. The content of an effective communication course and how teachers received this education (face-to-face, online, course duration, competency of the expert who gave the course, etc.) are unknown. Thus, in-service education should be planned by supporting systematic, applied studies and including monitoring and evaluation studies of the process.

In conclusion, the findings of this study showed that there is a relationship between the professional knowledge, skills, and competencies of teachers and the quality of inclusive education practices. Teachers' knowledge and experiences regarding in-class effective communication skills and 21st century skills as one of the principal skills during undergraduate education will be reflected in their professional practices. Thus, these skills of teachers should be supported through applied practices from the pre-service period. Because these achievements can be reflected in an inclusive climate in the classrooms where they work in the following years. Teachers' professional competencies are an important variable for providing effective teaching processes for students with special needs who have cognitive, social, physical, communication, language, and speech differences compared to their peers with typical development.

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APPENDIX

Table 2.
Descriptive Statistics Regarding In-Class Effective Communication Skills Perception Scores

Independent variables	Categories	N	$\bar{X}$	sd.	Mod	Median	Skewness	Kurtosis
Gender	Male	50	103,80	8,99	115	104	-0,664	0,207
	Female	82	104,82	8,62	115	106	-0,626	-0,577
Professional Seniority	between 0-5 years	17	103,90	8,53	96[a]	105	-0,627	-0,298
	between 6-10 years	17	105,0	7,80	105	105	-0,315	-0,987
	between 11-15 years	24	103,08	10,21	115	103,5	-0,866	0,418
	between 16-20	25	103,44	9,01	113[a]	103	-0,492	-0,519
	21 years and above	49	105,57	8,40	115	106	-0,582	-0,838
Classroom Size	10-20 students	26	104	7,52	105	105	-0,328	-0,902
	21-30 students	62	104,5	9,20	115	104	-0,683	-0,072
	31-40 students	33	104,3	8,17	111	115	-0,972	0,571
	more than 40	11	105,4	11,33	115	115	-0,568	-1,744
Grade Level	1st grade	32	104,5	9,18	115	104,5	-0,430	1,030
	2nd grade	27	104,07	7,31	102[a]	115	-0,200	-0,566
	3rd grade	34	103,14	10,03	115	115	-0,854	0,181
	4th grade	39	105,74	8,20	115	115	-0,650	-0,798
Number of classrooms they teach	Single classroom	29	100,93	9,40	96[a]	115	-0,531	-0,044
	Two classrooms	17	105,06	6,70	105	114	-0,531	-0,316
	Three classrooms and more	86	105,50	8,66	115	115	-0,667	-0,513
Educational level	Undergraduate	104	105	8,30	115	115	-0,714	0,076
	Master's Degree	28	102,32	10,09	115	115	-0,314	-1,072
Number of students with special needs in the classroom	One student	78	103,93	9,02	115	115	-0,676	-0,116
	Two students	53	105,24	8,40	115	115	-0,581	-0,671
Attending to effective communication course	Yes	51	105,17	7,91	115	115	-0,430	-0,903
	No	80	103,91	9,29	115	115	-0,666	-0,247

[a]It has more than one mod value.

Table-3
Descriptive Statistics Regarding Teaching 21st Century Skills

Independent variables	Categories	N	$\bar{X}$	sd.	Mod	Median	Skewness	Kurtosis
Gender	Male	50	58,20	7,43	57[a]	57,5	0,042	-1,112
	Female	82	55,49	8,35	56	56	-0,143	-0,427
Professional Seniority	between 0-5 years	17	51,88	8,60	47	52	0,171	0,265
	between 6-10 years	17	56,70	8,52	51[a]	58	-0,366	0,035
	between 11-15 years	24	55,75	7,23	56	56	0,098	-0,496
	between 16-20	25	58.64	8,25	56	60	-0,501	-0,887
	21 years and above	49	57,34	7,74	70	57	0,008	-0,394
Classroom Size	10-20 students	26	54,77	8,40	51[a]	55,50	-0,480	0,084
	21-30 students	62	56,76	8,16	56	56	0,071	-1,003
	31-40 students	33	57,18	7,40	54	57	-0,066	-0,329
	more than 40	11	57,27	9,50	51[a]	57	-0,485	0,145
Grade Level	1st grade	32	54,60	9,18	51[a]	56	-0.274	-0,641
	2nd grade	27	53,66	7,68	48[a]	53	0,585	0,383
	3rd grade	34	57,35	7,21	57	57	0,108	-0,699
	4th grade	39	59,33	7,34	55[a]	60	-0,303	-0,578
Number of classrooms they teach	Single classroom	29	52,62	7,17	48[a]	52	-0,325	0,192
	Two classrooms	17	56,11	7,27	47	56	-0,011	-1,471
	Three classrooms and more	86	57,90	8,18	70	57	-0,233	-0,573
Educational level	Undergraduate	104	56,64	7,91	48[a]	56	0,067	-0,824
	Master's Degree	28	56,03	8,87	57	57	-0,691	0,225
Number of students with special needs in the classroom	One student	78	56,57	8,22	48[a]	56,5	-0,203	-0,581
	Two students	53	56,51	8,04	57	56	-0,064	-0,345
Attending to effective communication course	Yes	51	56,41	7,60	58[a]	57	-0,113	-0,461
	No	80	56,63	8,50	56	56	-0,172	-0,547

[a]It has more than one mod value.