Examining Secondary School Students' Perceptions of Collaboration: A Field Research

ABSTRACT

Aims: This research aims to investigate collaboration skills perceptions of secondary school students at a public school in Türkiye. Accordingly, the research problem and sub-problems have been formed as follows: How do participants (secondary school students) perceive their collaboration skills? Sub-problems: Do participants' perceptions of collaboration skills differ significantly depending on their gender, grade and family's socio-economic status?
Methodology: As the aim of this research is to examine the current status of a given group of people, namely secondary school students in a public school in Türkiye, in terms of a variable, which is perception of collaboration skills, the research employed a quantitative descriptive methodology. A total of 332 students participated in the study and 59.64% of the participants were female (198 students) and 40.36% were male (134 students). The students were distributed according to their grade levels, with 29.52% (98 students) in 5th grade, 22.89% (76 students) in 6th grade, 24.40% (81 students) in 7th grade and 23.19% (77 students) in 8th grade. According to socio-economic status, 43.37% (144 students) had low socio-economic status, 41.27% (137 students) had medium socio-economic status and 15.36% (51 students) had high socio-economic status. The attitudes of secondary school pupils toward collaboration were ascertained by descriptive analysis, and Mann-Whitney U and Kruskal Wallis tests were used for comparisons.
Results: In terms of SSCS, the minimum value is 3.25 and the maximum value is 5. The mean value was 4.45 and the standard deviation was 0.41. This shows that students' attitudes towards collaboration are generally high, and the responses are close to each other. the mean rank value for female students was 213.91 and the total rank value was 49786.50, while the mean rank value for male students was 199.52 and the total rank value was 35213.00. Mann-Whitney U value was 18462,500, p value was .01 and this difference was statistically significant ($p < 0.05$). the mean rank values of the students according to the grade levels are as follows: 167.45 for 5th grade, 201.94 for 6th grade, 202.16 for 7th grade and 206.19 for 8th grade. Kruskal-Wallis H value is 1,110, df = 3 and p value is ,09, and this difference is not statistically significant ($p > 0.05$). the mean rank values of the students according to their socio-economic status are as follows: 191,12 for low status, 187,32 for medium status and 201,01 for high status. Kruskal-Wallis H value is 1,201, df = 3 and p value is ,07, and this difference is not statistically significant ($p > 0,05$).
Conclusion: Secondary school students have moderate to high positive evaluations of collaboration in various dimensions and that these evaluations are more homogeneous in some dimensions and more variable in others. Female students have higher scores than male students in the dimensions of emotional evaluations, cooperation process and attitudes towards cooperation, but there is no significant difference between genders in the dimension of roles and responsibilities. Secondary school students' collaboration skills and related attitudes do not differ significantly according to their grade levels. and socio-economic status.

Keywords: secondary school students, collaboration skill, perception, grade, gender, socio-economic status

1. INTRODUCTION

Collaboration skills include students' ability to work together effectively in group work, problem solving processes and social interactions. Main themes and findings in the literature on this topic can be categorized into five topics. First, the importance and benefits of collaboration are highlighted as collaboration increases students' academic achievement and positively affects their learning process. Group work helps students better understand and apply knowledge. Besides, collaboration improves students' social skills such as empathy, communication and problem solving. These skills play an important role both in school and in daily life. What is more, collaboration increases students' interest and participation in lessons and increases their motivation [1]. To create a classroom climate that helps stimulate and motivate pupils, collaboration is a crucial learning method. It gives students the chance to learn through social contact in addition to supporting them in taking ownership of their education [2].

The modern schoolteacher must not only adapt to changing learning settings but also develop a flexible and adaptive pedagogical approach in order to give pupils increasingly individualized help [3]. Developing collaboration skills requires teachers to use teaching strategies as teaching strategies that encourage collaboration provide opportunities for students to collaborate. For example, methods such as group projects, discussion sessions and joint problem-solving activities are used. Use of Technology is also important since digital tools and platforms are among the important resources that support collaboration [4, 5]. Online collaboration tools make it easier for students to work and communicate together [6, 7], and in addition to giving students more opportunities for collaborative work, the design makes it easier for teachers to record more instances of student collaboration [8].

The collaboration process brings challenges and might have barriers to deal with within the classroom [9]. For example, conflicts that may arise during group work can negatively affect the cooperation process. Therefore, conflict management and resolution strategies are important. Another important issue is the acceptance of differences as individual differences among students (e.g. personality, study style, academic abilities) can make collaboration processes difficult. Acceptance and management of these differences is important [10, 11].

In order to prepare students for the social and professional realities of the twenty-first century, one of the most important competencies that educators can impart in the classroom is the ability to collaborate. Studies reveal that pupils frequently learn in environments that do not encourage peer collaboration [12]. The literature on secondary school students' collaboration skills is generally shaped by research in the fields of educational sciences, psychology and sociology. Research on collaboration skills is conducted both quantitatively (questionnaires, scales) and qualitatively (observation, interviews). These studies reveal the effects and processes of collaboration on students in detail. Various scales and questionnaires have been developed to assess collaboration skills. These tools measure the level and ability of students to collaborate or their perceptions of being able to collaborate with their peers. Studies on cooperation projects implemented in specific schools or classrooms and their results, showing how cooperation is implemented in practice and what results have been achieved.

Investigating the collaboration skills of secondary school students is of great importance in terms of educational sciences and pedagogical practices for several reasons. Firstly, collaborative processes develop students' ability to empathize, understand others' perspectives and accept differences [3]. This social and emotional development contributes to students becoming successful and harmonious individuals both at school and throughout

life. Secondly, collaboration develops students' skills in effective communication, listening and self-expression. These skills play an important role in academic success and personal relationships [13]. Thirdly, collaboration enables students to deepen their understanding and consolidate their knowledge. Group work enriches the learning process with different perspectives and ways of thinking. Fourthly, collaborative processes develop students' critical thinking and problem-solving skills. This is especially important in tasks that require working together on complex problems. Fifthly, in today's business world and social life, cooperation, teamwork and communication skills are of great importance. Gaining these skills at an early age will help students succeed in their future careers and social lives as collaboration skills increase the capacity to adapt to changing and diverse environments. Students develop the ability to work with different groups and adapt to various situations [14]. Sixthly, collaboration encourages the participation of all students and allows students of different ability levels to learn from each other. This promotes equality and inclusion in the classroom and collaborative experiences increase students' confidence in their own abilities and develop their sense of self-efficacy. Successful collaborative experiences build students' confidence in themselves and others. Lastly, research on collaboration skills contributes to the development of educational programs and curricula. By revealing which teaching strategies and methods are most effective, research helps educators develop more effective programs. Scientific research plays an important role in determining educational policies. Policies to improve collaboration skills improve students' overall quality of education and their school experience [15].

As potential benefits and drawback have been discussed up to here, investigating secondary school students' collaboration skills is critical for supporting students' social, emotional and academic development, helping them prepare for the future and improving the quality of the education system. Therefore, research on how to develop collaboration skills and how to support these processes provides valuable information for both educators and policy makers, and this process surely starts with trying to understand perceptions of collaboration skills by learners themselves. As a result, this research aims to investigate collaboration skills perceptions of secondary school students at a public school in Türkiye. Accordingly, the research problem and sub-problems have been formed as follows:

Research Problem: How do participants (secondary school students) perceive their collaboration skills?

Sub-problems: Do participants' perceptions of collaboration skills differ significantly depending on their gender, grade and family's socio-economic status?

2. METHODOLOGY

As the aim of this research is to examine the status of a given group of people, namely secondary school students in a public school in Türkiye, in terms of a variable, which is perception of collaboration skills, the research employed a quantitative descriptive methodology. The main aim of quantitative descriptive research is to describe and understand the current situation about a particular situation, event or phenomenon in a systematic and objective way. This type of research is conducted to describe and understand the current situation about a topic or situation, to determine the specific characteristics of a given population or sample group and the distribution of these characteristics, to determine how certain events or situations change over time and whether there are certain trends, and to determine the relationships between different variables and the strength of these relationships [16].

2.1 Participants

Table 1. Demographic Information of Participants

Gender	N	%
Female	198	59,64
Male	134	40,36
Total	332	100,00
Grade	N	%
5th	98	29,52
6th	76	22,89
7th	81	24,40
8th	77	23,19
Total	332	100,00
Socio-economic Status	N	%
Low	144	43,37
Middle	137	41,27
High	51	15,36
Total	332	100,00

A total of 332 students participated in the study and 59.64% of the participants were female (198 students) and 40.36% were male (134 students). The students were distributed according to their grade levels, with 29.52% (98 students) in 5th grade, 22.89% (76 students) in 6th grade, 24.40% (81 students) in 7th grade and 23.19% (77 students) in 8th grade. According to socio-economic status, 43.37% (144 students) had low socio-economic status, 41.27% (137 students) had medium socio-economic status and 15.36% (51 students) had high socio-economic status.

2.2. Instrument

The Scale for Self-Evaluation of Collaboration Skills (SSCS) scale [17] has 29 items total, all in 5-point Likert item style, 3 of which are negative. 29 is the lowest possible score, while 145 is the highest. The scale, which has three sub-dimensions labeled "affective considerations, collaboration process, and roles and responsibilities," was found to have a Cronbach's Alpha reliability coefficient of ,88. In this study, Cronbach's Alpha reliability coefficient value of ,90 was attained.

2.3 Data Analysis

The attitudes of secondary school pupils toward collaboration were ascertained by descriptive analysis. The weighted average method was used to analyze descriptive data. Interval criteria have been created to interpret these weighted averages. The interval coefficient in the study was determined to be $\alpha = 5-1\div5=0.80$. Thus, levels 1–1,80 are regarded as low levels, 1,81–2,60 as above low, 2,61–3,40 as levels in the middle, 3,41–4,20 as levels above medium, and 4,21–5, as levels over high. The Kolmogorov-Smirnov test was run to see if the data was regularly distributed, which helped choose which tests to run during the data analysis.

3. RESULTS AND DISCUSSION

Table 2. SSCS Score Distribution

	N	Min	Max	X	Sd
Affective considerations	332	3,1	4,5	3,48	,40
Collaboration process	332	2,7	5	3,46	,47
Roles and responsibilities	332	2	3,5	3,40	,56
SSCS	332	3,25	5	4,45	,41

The study examined various collaboration skills of secondary school students and different dimensions of these skills (Table 2). The four main dimensions analyzed are: affective considerations, collaboration process, roles and responsibilities, and SSCS (students' attitudes towards collaboration). In Affective considerations sub-dimension, the minimum value was 3.1 and the maximum value was 4.5. The mean (X) value was 3.48 and the standard deviation (SD) was 0.40. This shows that students' emotional evaluations during collaboration were generally at a moderate level and the responses were quite close to each other. In the collaboration process dimension, the minimum value was 2.7 and the maximum value was 5. The mean value was 3.46 and the standard deviation was 0.47. This shows that students have generally positive evaluations of the collaboration process, but individual differences are slightly higher. In roles and responsibilities dimension, the minimum value is 2 and the maximum value is 3.5. The mean value was 3.40 and the standard deviation was 0.56. This indicates that students have moderate evaluations of roles and responsibilities, but there is a wider distribution of responses. In terms of SSCS, the minimum value is 3.25 and the maximum value is 5. The mean value was 4.45 and the standard deviation was 0.41. This shows that students' attitudes towards collaboration are generally high, and the responses are close to each other.

In general, these findings indicate that middle school students have moderate to high positive evaluations of collaboration in various dimensions and that these evaluations are more homogeneous in some dimensions and more variable in others. The literature presents similar results [13, 18].

Table 3. SSCS in terms of Gender

	Gender	N	Mean Rank	Sum of Rank	U	p
Affective considerations	Female	198	201,26	49543,00	16542	,03*
	Male	134	196,51	32543,00		
Roles and responsibilities	Female	198	203,32	45367,00	19369,000	,06
	Male	134	201,68	38765,00		
Collaboration process	Female	198	210,13	49432,50	18471,500	,00*
	Male	134	189,44	31546,00		
SSCS	Female	198	213,91	49786,50	18462,500	,01*
	Male	134	199,52	35213,00		

Different dimensions of secondary school students' collaboration skills perceptions were compared according to their gender (Table-3). Mann-Whitney U test results are as follows: In Affective Considerations sub-dimension, the mean rank value for female students (n = 198) was 201.26 and the total rank value was 49543.00. For male students (n = 134), the mean rank value was 196.51 and the total rank value was 32543.00. Mann-Whitney U value was 16542, p value was .03 and this difference was statistically significant ($p < 0.05$). This result shows that female students scored significantly higher in emotional evaluations than male students.

In Roles and Responsibilities sub dimension, the mean rank value for female students was 203.32 and the total rank value was 45367.00, while the mean rank value for male students was 201.68 and the total rank value was 38765.00. Mann-Whitney U value was 19369,000, p value was .06 and this difference was not statistically significant ($p > 0.05$). This result shows that there is no significant difference between male and female students in terms of roles and responsibilities.

In Collaboration Process sub-dimension, the mean rank value for female students was 210.13 and the total rank value was 49432.50, while the mean rank value for male students was 189.44 and the total rank value was 31546.00. Mann-Whitney U value was 18471,500, p value was .00 and this difference was statistically significant ($p < 0.05$). This result shows

that female students scored significantly higher in the collaboration process evaluations than male students.

In SSCS, the mean rank value for female students was 213.91 and the total rank value was 49786.50, while the mean rank value for male students was 199.52 and the total rank value was 35213.00. Mann-Whitney U value was 18462,500, p value was .01 and this difference was statistically significant ($p < 0.05$). This result shows that female students scored significantly higher in attitudes towards cooperation than male students.

In general, the results show that female students have higher scores than male students in the dimensions of affective considerations, collaboration process and attitudes towards collaboration, but there is no significant difference between genders in the dimension of roles and responsibilities. Similar and different results are provided within the literature in different contexts and levels [19, 20, 21].

Table 4. SSCS in terms of Grade

	Grade	N	%	Mean Rank	Df	x^2	p
Affective consideration	5th	98	29,52	133,11	3	5,546	,06
	6th	76	22,89	154,31			
	7th	81	24,40	198,14			
	8th	77	23,19	201,69			
Roles and responsibilities	5th	98	29,52	167,32	3	2,231	,55
	6th	76	22,89	210,79			
	7th	81	24,40	209,80			
	8th	77	23,19	208,91			
Collaboration process	5th	98	29,52	179,14	3	1,611	,41
	6th	76	22,89	201,27			
	7th	81	24,40	203,55			
	8th	77	23,19	199,67			
SSCS	5th	98	29,52	167,45	3	1,110	,09
	6th	76	22,89	201,94			
	7th	81	24,40	202,16			
	8th	77	23,19	206,19			

The dimensions of secondary school students' collaboration skills were compared according to their grade levels (Table 4). The results of the Kruskal-Wallis H test are as follows. In Affective Considerations sub-domain, the mean rank values of the students according to their grade levels are as follows: 133.11 for 5th grade (n = 98), 154.31 for 6th grade (n = 76), 198.14 for 7th grade (n = 81) and 201.69 for 8th grade (n = 77). Kruskal-Wallis H value was 5,546, df = 3 and p value was .06, and this difference was not statistically significant ($p > 0.05$). This result shows that there is no significant difference between the grade levels in terms of emotional evaluations.

In Roles and Responsibilities sub-dimension, the mean rank values of the students according to the grade levels are as follows: 167.32 for 5th grade, 210.79 for 6th grade, 209.80 for 7th grade and 208.91 for 8th grade. Kruskal-Wallis H value is 2,231, df = 3 and p value is ,55, and this difference is not statistically significant ($p > 0.05$). This result shows that there is no significant difference between the grade levels in terms of roles and responsibilities.

In Collaboration Process sub-dimension, the mean rank values of the students according to the grade levels are as follows: 179.14 for 5th grade, 201.27 for 6th grade, 203.55 for 7th grade and 199.67 for 8th grade. Kruskal-Wallis H value is 1,611, df = 3 and p value is ,41,

and this difference is not statistically significant (p > 0.05). This result shows that there is no significant difference between the grade levels in terms of collaboration process.

In SSCS, the mean rank values of the students according to the grade levels are as follows: 167.45 for 5th grade, 201.94 for 6th grade, 202.16 for 7th grade and 206.19 for 8th grade. Kruskal-Wallis H value is 1,110, df = 3 and p value is ,09, and this difference is not statistically significant (p > 0.05). This result shows that there is no significant difference between grade levels in terms of attitudes towards collaboration.

In general, these results reveal that secondary school students' collaboration skills and related attitudes do not differ significantly according to their grade levels. When the literature is reviewed, research with similar results can be found [13, 18].

Table 5. SSCS in terms of Socio-economic Status

	Status	N	%	Mean Rank	Df	x^2	p
Affective consideration	Low	144	43,37	121,14	3	4,324	,07
	Middle	137	41,27	146,51			
	High	51	15,36	154,68			
Roles and responsibilities	Low	144	43,37	154,65	3	2,367	,41
	Middle	137	41,27	178,87			
	High	51	15,36	169,22			
Collaboration process	Low	144	43,37	181,46	3	2,123	,30
	Middle	137	41,27	189,38			
	High	51	15,36	203,51			
SSCS	Low	144	43,37	191,12	3	1,201	,07
	Middle	137	41,27	187,32			
	High	51	15,36	201,01			

The various dimensions of the collaboration skills of secondary school students were compared according to socio-economic status (Table 5). The results of the Kruskal-Wallis H test are as follows: In terms of Affective Considerations sub-dimension, the mean rank values of the students according to their socio-economic status are as follows: 121.14 for low status (n = 144), 146.51 for medium status (n = 137) and 154.68 for high status (n = 51). The Kruskal-Wallis H value is 4.324, df = 3 and p value is .07, and this difference is not statistically significant (p > 0.05). This result shows that there is no significant difference in terms of emotional evaluations according to students' socio-economic status.

When it comes to Roles and Responsibilities sub-dimension, the mean rank values of the students according to their socio-economic status are as follows: 154.65 for low status, 178.87 for medium status and 169.22 for high status. Kruskal-Wallis H value is 2,367, df = 3 and p value is ,41, and this difference is not statistically significant (p > 0.05). This result shows that there is no significant difference in terms of roles and responsibilities according to students' socio-economic status.

In Collaboration Process sub-dimension, the mean rank values of the students according to their socio-economic status are as follows: 181.46 for low status, 189.38 for medium status and 203.51 for high status. Kruskal-Wallis H value is 2,123, df = 3 and p value is ,30 and this difference is not statistically significant (p > 0.05). This result shows that there is no significant difference in terms of the collaboration process according to the socio-economic status of the students.

In SSCS, the mean rank values of the students according to their socio-economic status are as follows: 191,12 for low status, 187,32 for medium status and 201,01 for high status.

Kruskal-Wallis H value is 1,201, df = 3 and p value is ,07, and this difference is not statistically significant (p > 0,05). This result shows that there is no significant difference in terms of students' attitudes towards collaboration according to their socio-economic status.

In general, these results reveal that secondary school students' collaboration skills and related attitudes do not differ significantly according to socio-economic status, which is consistent with the literature [13].

4. CONCLUSION

Secondary school students have moderate to high positive evaluations of collaboration in various dimensions and that these evaluations are more homogeneous in some dimensions and more variable in others. Female students have higher scores than male students in the dimensions of emotional evaluations, cooperation process and attitudes towards cooperation, but there is no significant difference between genders in the dimension of roles and responsibilities. Secondary school students' collaboration skills and related attitudes do not differ significantly according to their grade levels. Secondary school students' collaboration skills and related attitudes do not differ significantly according to socio-economic status.

It is to be noted that current research was limited to self-reporting in terms of the data collection; as a result, it would be advised that upcoming research in the same subject support the data collection with field observations. Besides, focus group interviews might deepen understanding the place and importance of collaboration among secondary school students.

Disclaimer (Artificial intelligence)

Authors hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of manuscripts.

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