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Improving Students' Language Self-Efficacy and Success with Jigsaw-4 Technique in English Classes

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ABSTRACT

In this study, it is aimed to search the effect of Jigsaw-4 activities on high school students' academic success and self-efficacy in English teaching. While in the experimental group Jigsaw-4 activities were used, in the control group teaching-learning activities based on teacher explanation were used. The mixed design was used in the study. In the quantitative part, a pre-posttest control group experimental design; interviews with the students and teachers after the activities, observations during the activities, and student evaluation forms were used. The data were obtained with an achievement test, English self-efficacy belief scale, observations, interviews, and student evaluation forms. Parametric and non-parametric tests were used to analyze the quantitative data and content analysis technique was used to analyze qualitative data. As a result of the study, it was found that the Jigsaw-4 technique was effective in the experimental group's success and self-efficacy beliefs; the themes of emotion, characteristics of the teaching-learning process, and contribution affecting students' success and self-beliefs were found.

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Schools have some educational functions beyond helping students acquire certain educational outcomes. Because of these functions, schools can be defined not only as places where necessary information is acquired, but also as environments where individuals are offered various opportunities for social and emotional development. When it is considered that the innovations and changes brought by the age, it can be said that the ultimate goal of schools should be the development of the student (Ün-Açıkgöz, 2016). However, schools are still seen as places where only knowledge is transferred and it is stated that this development has not been fully met (Taşpınar, 2017). As a result, it is seen that schools are getting behind in educating the type of people required by the age and meeting the needs of society (Sarı, 2016). For this reason, it has been aimed to adapt to the requirements of the age over time (Parlar, 2012). The roles of schools and teachers have changed and it has been emphasized that they are decisive in providing students with the skills required by the age (Ateş & Buluç, 2015). As a result, new approaches, methods and techniques in education has begun to be created and used (Altunbay, 2012). Nowadays, discussions on how to ensure effective participation in classes are increasing, and many contemporary methods have emerged to carry out the learning-teaching process efficiently (Köksal, 2016; Yangın, 2005). "Collaborative learning (CL)", which has been studied more than 1.000.000 times in the literature in the last 10 years in the Google Academic database, is one of these contemporary methods.

The CL, which dates back to the 17th century, has been emphasized in various ways by Commenius, Rousseau, Pestallozi and Dewey (Slavin, 1995). It is emphasized that this method includes a "paradigm shift" in teaching (D. Johnson et al., 1994) and is important in achieving the goal (Edge, 1992). This method consists of various techniques such as student team achievement sections, team game tournaments, team-supported individualization, Jigsaw etc. (D. Johnson et al., 2000; Slavin, 1991). Jigsaw, which is among these techniques, was developed by Aronson and his students. It was designed to replace the traditional competitive learning structure with CL (Aronson, 2000).

When the studies related to the education are examined, it is emphasized that the CL is an effective feature in language teaching (Jacobs, 2006); therefore, it is frequently used in English language teaching (Alghamdi & Gillies, 2013; Kartal & Özbek, 2017). It has been stated that the use of the CL in different courses positively improves students' attitudes, motivations and success, ensures the permanence of learning and has a positive effect on teachers' opinions (Yıldırım & Girgin, 2012). In addition, it is claimed that it provides more interaction opportunities in an environment that motivates learners and reduces stress (Ghaith, 2003), reduces anxiety (Kartal & Özbek, 2017), increases interest (Chi, 2012), helps students learn more English, understand how to work with others and develop different skills (Wichadee, 2005), enables communication, enjoys in-class activities and diversifies learning (Duxbury & Tsai, 2010), increases motivation and sharing of metacognitive strategies in thinking and learning (Bromley & Modlo, 1997), provides immersion in the foreign language learned in a group and learning the language by living it (Apple, 2006).

It is noteworthy that the studies focus on features such as academic success, attitude, motivation, acquisition of language skills and permanence of learning in students (Khan & Akhtar, 2017; Motaei, 2014). It is claimed that the affective features of this method, which include behaviors such as interest, attitude, motivation, anxiety and self-regulation in learners, also significantly affect learning (Gömleksiz, 2003; İlbeği & Çeliköz, 2020), affective behaviors that enable learners to cooperate keep them active (Gömleksiz, 2003) and it is recommended to use these features especially in foreign language teaching (Hancı-Yanar & Bümen, 2012). It should not be forgotten that in order to achieve its results, affective characteristics such as self-efficacy, attitude, etc. are also important in addition to the cognitive domain in a foreign language teaching program (Hancı-Yanar & Bümen, 2012). It is also emphasized that the relationship between students' academic success and self-

efficacy is found, especially in foreign language courses (Tılfarlıoğlu & Çiftçi, 2011).

According to Bandura (1978), "high self-efficacy belief brings high academic success." With the increase in this belief, both an individual's afraid to try something (Ün-Açıkgöz, 2016) and determination he shows will increase (Bandura, 2000). As can be understood from the definitions, self-efficacy is an important variable for providing learning motivation and being successful. For this reason, self-efficacy and success are two important variables that should be paired with in English lessons.

The degree to which individuals perceive themselves as competent in language skills, which consist of four basic skills: listening, reading, writing and speaking, provides information about their self-efficacy beliefs (Büyükduman, 2006). Establishing a cycle that will increase students' language self-efficacy beliefs and thus their success is considered important for foreign language teaching (Turanlı, 2007). It is also suggested that choosing topics that students are interested in, applying to activities on this subject, and making them more active by working in groups can improve their self-efficacy beliefs about English (İlbeği & Çeliköz, 2020).

In studies where language self-efficacy and success are put together, it is stated that language self-efficacy is an important factor that predicts student success (Büyükduman, 2006). For this reason, it is recommended that CL should be frequently used in foreign language teaching, included in the curriculum (Memduhoğlu et al., 2014) and should be made widespread at all levels (Karadeniz, 2022).

In this study, the jigsaw-4 technique was preferred for reasons such as its use in foreign language teaching increasing students' academic success (Dellalbaşı & Soylu, 2012) and developing cooperation skills (Bölükbaş, 2014; Maden, 2011). When the studies are considered as a whole, it is seen that this technique is used more in foreign language teaching (Hadi, 2023; Maden, 2011). However, no research has been found in which student success and self-efficacy are tried to be improved with jigsaw-4 activities and evaluated as a whole. The problem of this research is "Does the jigsaw-4 technique used in English teaching have an effect on high school students' success and self-efficacy in English lessons?" Based on this research question, the sub-problems of the research are as follows:

1. Is the difference between

a) the achievement test scores of experimental and control groups,

b) experimental groups' pre and post-test achievement scores,

c) control groups' pre and post-test achievement scores,

d) the achievement test progress (difference) scores of both groups statistically significant?

2. Is the difference between

a) the pre-post English self-efficacy belief scale scores of experimental and control groups,

b) the pre-test and post-test English self-efficacy belief scale scores of the experimental group

c) the pre-test and post-test English self-efficacy belief scale scores of the control group statistically significant?

d) the progress (difference) scores of the experimental and control groups to whom the jigsaw-4 and teacher-based teaching-learning activities were applied statistically significant?

3. What are the opinions of the class and guidance teachers about goal-based learning and the observations of the guidance teachers and instructors of the experimental group students to whom the jigsaw-4 technique was applied?

2. Method

In this study, a mixed research model was adopted in which qualitative and quantitative research designs were applied together, and the sequential explanatory mixed method was used. In this design, where the priority is usually on quantitative data, qualitative data are obtained primarily to augment quantitative data. Data analysis is interrelated and combined in the data interpretation and discussion sections. Although the information obtained with quantitative data reveals the general results of the study, it cannot explain how the results are (Creswell, 2014). So,

quantitative data are collected and analyzed, after that qualitative data are collected and analyzed, and finally quantitative data are supported in this study.

In the quantitative part, a quasi-experimental model with a pre-test-post-test control group was applied. The difference of this model from a fully experimental design is that there is no random assignment (Cohen et al., 2002). While its features are similar to a fully experimental design, there is a random assignment of participants to groups (Balcı, 2001). The reason why the quasi-experimental design was preferred is that the equality of the groups was used. The research design's symbolic representation is given in Table 1.

Table 1
Mixed Research Design

Group	Pre test	Interference	Post test	Analysis	
Experimental Group	1. Achievement test 2. English Self-Efficacy Belief Scale (ESEBS)	Jigsaw-4 activities 1. Evaluation forms 2. Guidance teacher and instructor observations	1. Achievement test 2. ESEBS 3. Interview with the experimental group	Pre-posttest comparison-Dependent	Progress Scores (pre-posttest difference progress scores are taken) Comparison - Independent
Control Group		Teaching-learning activities based on teacher		Pre-posttest comparison-Dependent	
Analysis	Pre-test comparison – Independent		No comparison is made		

As seen in Table 1, achievement test and ESEBS were applied as pre-tests to the groups. The lessons were carried out with Jigsaw-4 activities in the experimental group, while the lessons were carried out with teaching-learning activities based on teacher explanation in the control group. The experimental group members' opinions were obtained with evaluation forms throughout the activities. After the completion of the activities, post-tests were applied to both groups at the same time one week later. Interviews were also conducted with the experimental group.

2.1. Sample/Participants

In this study, the purposeful sampling method was used. Patton (1987) states that more detailed studies can be conducted with this method if there is rich information. The participants of the study consist of two different classes of a high school in the 2023-2024 academic year. When determining the study group, the volunteering of the teachers and students, the suitability of the environment, and the support of the school administration to the process were taken into consideration. In addition, attention was paid to the class sizes and the similarity of the students' English course grades from the previous year. The study group's demographic characteristics are given in Table 2.

Table 2
The Study Group's Demographic Characteristics

Groups	Girl	Boy	Total	Application
Experimental	21	8	29	MoNE (2018) 12th grade English course curriculum + Jigsaw-4 activities
Control	13	12	25	MoNE (2018) 12th grade English course curriculum + Teaching method based on textbook and teacher explanation

According to Table 2; the experimental group consists of 29 students, the control group consists of 25 students. After obtaining the necessary permissions for the research, pre-tests were applied to both groups. According to the analysis of the achievement test and ESEBS pre-tests; it was found that there was no significant difference between the English success and language self-efficacy scores of both groups. Accordingly, it was seen that both groups had similar success and English self-efficacy skills.

2.2. Instruments

The data collection tools were considered in two groups as qualitative and quantitative. Quantitative data collection tools before the study were the achievement test including four basic skills developed by the researcher and ESEBS used with permission. Qualitative data collection tools were observation, interview and student evaluation forms. The process was observed by the instructor and the guidance teacher throughout the process and evaluation forms were applied to the students after the lessons where they evaluated themselves and their groups. After the activities, the same pre-test of the quantitative data collection tools was made, teacher and student interview forms were also added to the qualitative data collection tools. To develop the achievement test for the Friendship unit, the criteria prepared by Webb (1997) were followed.

While preparing the achievement test, all learning outcomes of the unit were specified, the MoNE (2018) English course 12th grade curriculum was reviewed and it was decided to focus on the "Friendship" unit. According to the acquisitions, a table of speciation was prepared for the content validity and the test items were written after receiving expert opinion. After the corrections, a pre-test was applied to 201 students who graduated from the 12th grade who had previously taught this unit. After the pre-test, the tests were scored and ranked from the highest to the lowest, taking 27% of the upper and lower groups. The obtained data were analyzed by using TAP analysis. Item difficulty and discrimination indexes were calculated, inappropriate items were deleted and the avaliable items were corrected, the test consisting of 35 questions was finalized. The reliability of the test (KR-21=0.84) shows that the items are reliable (Vansickle, 2015). Hancı-Yanar and Bümen (2012) developed ESEBS. After obtaining permission for the scale, CFA was performed. When the CFA fit indices were examined, it was seen that the fit values obtained ($X2 = 1339.53$; $X2/sd = 2.57$; RMSEA = .071; RMR = .110; CFI = .874) were acceptable.

Since the observations were made in the classroom, structured observation technique and non-participant observation were used. Interview, which is another technique used to collect the qualitative data, was conducted with the students in the experimental group, the guidance teacher and the classroom teacher after the activities Interview is a technique of collecting data through verbal communication (Karasar, 2012). The semi-structured interview technique was used to acquire data. While determining the questions in the form, the literature review was first conducted and the opinions of experts were received for the questions. After the necessary corrections and regulations, the final form was given. A pre-test was applied to check the functionality and understandability of the form. The pre-test was conducted with two students and one teacher, then the interview form was finalized and made ready for the application. The interviews were conducted in the form of focus groups. Because the most important aspect of focus group interviews is the acquisition of new and different ideas as a result of group dynamics and intra-group interaction (Kitzinger, 1995). They were asked to indicate the first five friends they wanted to participate in the focus group interviews via Google form and groups were formed according to the answers. The records must be reported by the researcher, and the names of the participants must definitely not be included in these reports or their names must not be included when referring to them (Kitzinger, 1995). The student and teacher interviews were held in the guidance room at the school so that they could feel comfortable and audio recordings were made in accordance with their voluntariness. In order to examine how students see

themselves about their roles and how they evaluate the group as a whole during the activities, a form consisting of two questions was given to the students at the end of each lesson and their opinions were taken.

2.3. Data Analysis

In this study, the achievement test and ESEBS analysis were the part of quantitative data analysis. In order to ensure validity and reliability checks before applying the scales to both groups, they were applied to different 201 students. Then, the data were transferred to the SPSS program in a computer environment and descriptive statistics such as percentage, frequency and standard deviation, arithmetic mean, DFA, parametric and non-parametric tests were used. When the data regarding whether the group scores showed normal distribution were examined; the scale did not show normal distribution, but the "p" values of the achievement test ($p>0.05$) met the condition. For this reason, achievement tests were analyzed with the help of related sample and unrelated sample t-tests (Can, 2018). ESEBS was analyzed with the non-parametric tests such as Wilcoxon signed ranks test and Mann-Whitney U test. If a significant difference is observed between the measurements, the effect size is calculated. The effect size is expressed by "d" and this value being 0 (zero) indicates that the mean is equal (Can, 2018). The effect size is evaluated as: 0.2 (small), 0.5 (medium), and 0.8 (large) (Green & Salkind, 2005).

The interviews, observations and evaluation forms were the part of the qualitative data of the research. The interview data were analyzed by using the MAXQDA program and the content analysis. The observation data was also analyzed with the help of content analysis. Focus group interviews are analyzed like other qualitative data collection methods (Britten, 1995; Mays & Pope, 1995). When analyzing the interview data, the recorded interviews were first converted into text and these data were transferred to the computer program.

To analyze observation and student evaluation forms, all the qualitative data were brought together and a common qualitative data set was obtained. After the reading of the entire data set, it was coded in detail, and a code list was created by determining the similarities and differences between the codes. Then, the themes and sub-themes were determined. The analysis was also analyzed with the descriptive analysis method. While reporting the interviews, the student codes were expressed as S1, S2 etc., the teacher codes were expressed as guidance teacher (GT), class teacher (CT) and the student opinions in the evaluation forms were expressed as (S).

2.4. Validity and Reliability

In order to ensure internal validity in the quantitative part of the study (McMillan & Schumacher, 2010), a control group with similar characteristics to the experimental group was selected, and pre-test and post-test were applied to both groups at the same time. To prevent the effect of subject loss, a larger sample group was selected and voluntary participation was ensured. Experimental activities were introduced, the purpose and process related to the activities were explained as much as necessary to ensure external validity in the study. To ensure structural validity, the purpose of the study was explained in detail, a mixed method study was conducted and care was taken to equalize the groups by comparing the pre-test. Finally; to ensure content validity, expert opinions were consulted and a table of specifications was created.

In order to ensure the validity and reliability of the qualitative part, some precautions were taken in line with the information (LeCompte & Goetz, 1982; Lincoln & Guba, 1985). For the consistency (internal reliability), the obtained data were stated directly, the findings obtained through observation were confirmed with interviews and evaluation forms, and the results were included by benefiting from the consensus between the two coders in the data analysis. In addition, the reliability of the analysis was explained in detail and the collected data were presented directly in a descriptive way. For credibility (internal validity), the interaction was kept for a long time, the findings were compared and explained with direct quotes. While the

interviews were conducted face to face, direct observation was made in the environment where the experimental activities were carried out. For confirmability (external reliability), the environment and process formed throughout the research were defined. The conceptual framework and assumptions used in the analysis of the data were defined. Data collection and data analysis were explained in detail. In order to ensure transferability (external validity), detailed descriptions were included in the presentation of the data and the participants were selected with purposeful sampling.

3. Findings

In order to determine the difference between experimental group's pre-test and post-test success scores, a related samples t-test was conducted and the results are given in the Table 3.

Table 3
T-Test Results Regarding the Differences in Pre-Post-Test Achievement Test Scores of the Experimental Group

Tests	N	$\bar{X}$	SS	Sd	t	p	Effect size η2
Pre test	29	54.76	10.03	28	-9.17	0.00*	2.27
Post test		79.38	8.75				

*p<0.05

According to Table 3, it can be said that there is a significant difference between the average exam scores of the experimental group before ($\bar{X}$pretest=54.75) and after the activities ($\bar{X}$posttest=79.38) [t (28) =-9.17, p<0.05]. According to the effect size (d=-2.27), this difference is very large. This result shows that Jigsaw-4 activities in the class has a significant effect on the students' success in English lessons.

A related samples t-test was used to determine the difference between the pre-test and post-test success scores of the control group and the result of analysis is given in the Table 4.

Table 4
T-Test Results for the Difference Between Pre- and Post-Test Achievement Test Scores of the Control Group

Tests	N	$\bar{X}$	SS	Sd	t	p	Effect size η2
Pre test	25	49.00	12.6	24	-5.72	0.00*	1.14
Post test		60.12	10.8				

*p<0.05

According to the table 4, it can be said that there is a significant difference between the average exam scores of the control group before ($\bar{X}$pretest=49) and after ($\bar{X}$posttest=60.12) [t (24) =-5.72, p<0.05] the activities. The effect size (d=1.14) shows that this difference is very large. It means that the use of the learning method based on teacher has a significant effect on the success of the students in English lessons.

In order to find the difference between the achievement test progress (difference) scores of both groups, the progress scores of the pre-test and post-test scores of both groups (difference = post-test - pre-test) and the averages of these differences were taken. Then an unrelated samples t-test was conducted. The data related with the analysis are given in Table 5.

Table 5
T-Test Results Regarding the Difference Between the Achievement Test Progress (Difference) Scores of Both Groups

Groups	N	$\bar{X}$ (Post-pre)	SS	Sd	t	p	Effect size (η2)
Experimental	29	24.62	10.83	24	-4.617	.000*	0.34
Control	25	11.44	10.01				

*p<0.05

According to the table 5, it can be said that the arithmetic means of the success difference score of the experimental group ($\bar{X}$=24.62) is 13.18 points higher than the control group ($\bar{X}$=11.44). It is seen that this difference between the means is significant (t=-.4.617, p<0.05). The calculated effect size (d=0.34) shows that this difference is close to medium. So, it can be said that the Jigsaw-4 technique is more effective in increasing academic success in English language teaching.

In order to determine the difference between the scores obtained by the experimental group from the ESEBS pre-test and post-test, the Wilcoxon signed rank test was conducted and the results are given in the Table 6.

Table 6
Pre-test and Post test ESEBS Analysis Results of the Experimental Group

	N	$\bar{X}$	SS	Average Rank	Total of rank	Z	p	Effect size (η2)
Negative ranks	0	41.34	11.77	.00	.00	-4.705	.000*	0.587
Positive ranks	29	104.93	26.21	15.00	435.00			
No difference	0							

*p<0.05

According to the table 6, a statistically significant difference between the scores obtained from ESEBS applied to the experimental group before and after the activities [z=-4.705, p<0.05] is found. The effect size (d=0.87) shows that the difference is large. All difference scores are in favor of positive ranks; it shows that the Jigsaw-4 activities have a significant effect on the students' self-efficacy in the English course.

Whether the score differences obtained by control group student' s ESEBS pre-test and post-test was statistically significant, Wilcoxon signed rank test was used. The result of analysis is given in Table 7.

Table 7
Pre-Post Test ESEBS Analysis Results of the Control Group

	N	$\bar{X}$	SS	Average Rank	Total of rank	Z	p
Negative ranks	10	82.88	28.24	12.65	126.50	-.671	.502*
Positive ranks	14	86.84	23.86	12.39	173.50		
No difference	1						

*p<0.05

According to the table 7, it can be concluded that there is no statistically significant difference between the scores of the control group from ESEBS before and after the activities [z=-.671, p>0.05]. All the difference scores are in favor of negative ranks, so teaching-learning activities based on teacher explanation do not have a significant effect on the self-efficacy of the control group students.

In order to determine the significance of the difference between the pre-test and post-test scores obtained by both groups from ESEBS, it was determined that the scales did not meet the normality values. Therefore, the Mann-Whitney U test was used to compare the groups. The analysis result is given in the Table 8.

Table 8
Mann-Whitney U Test Results for the Differences in Pre-Post Test ESEBS Total Scores of Both Groups

Groups	N	Average Rank	Total of rank	U	Z	p	Effect size (η2)
Experimental	29	38.88	1127.50	32.50	-5.726	0.00*	0.78
Control	25	14.30	357.50				

p<0.05

According to the table 8, it can be said that there is a statistically significant difference between the scores of both groups before and after the activities in ESEBS [U=32.50, p<0.05]. The effect size (d=-0.78) shows that this difference is close to the large effect value. Based on this result, it is seen that the Jigsaw-4 technique is more effective in increasing students' self-efficacy in English compared to teaching-learning activities based on teacher explanation.

In the analysis of the data obtained from the opinions of the experimental group students, the class and the guidance teacher, and the observations of the guidance teacher and the instructor regarding the Jigsaw-4 technique, it was seen that the theme of "emotions", which is one of the factors affecting success, was stated as a common opinion. While expressing them; student opinions (S), class teacher opinions (CT), and guidance teacher opinions (GT) were given. Information regarding this theme is given in the Figure 1.

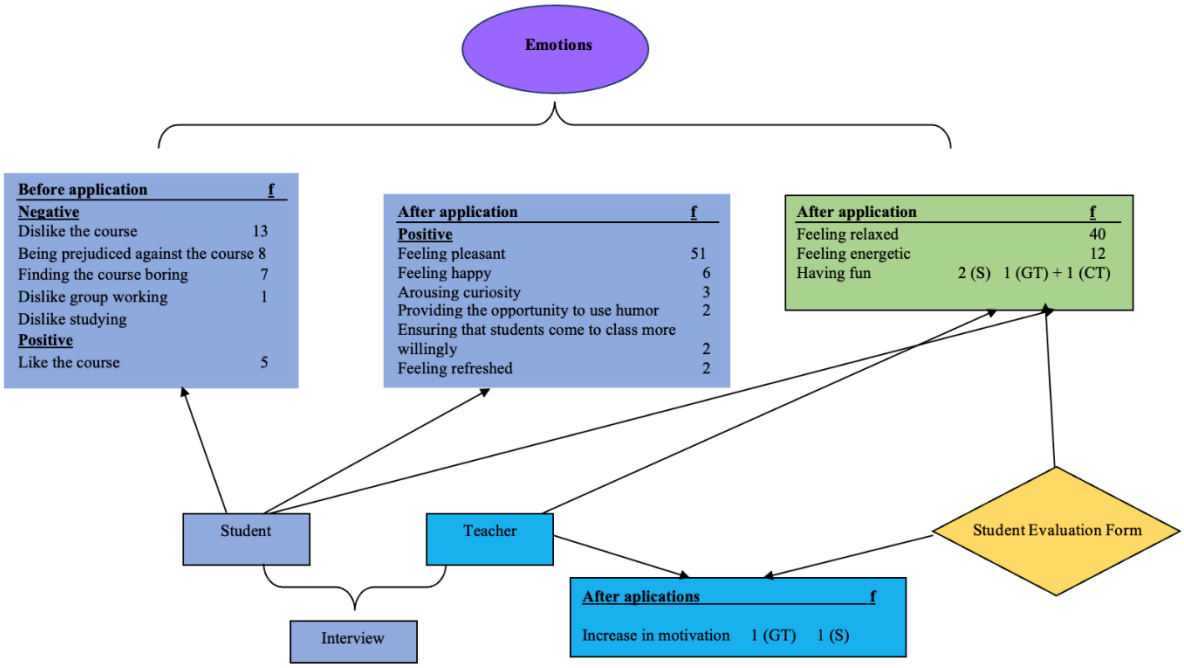

Figure 1
Teacher and student views on the theme of emotion

According to Figure 1, the students had both negative and positive feelings about English course before the activities. Among the negative feelings of the students; it was seen that they disliked the English course (13) and were prejudiced (8). It was also seen that the students found this lesson boring (7), disliked group working (1) and studying the English (1). In addition, it was seen that there were also students who expressed positive opinions and liked the English course (5).

After the Jigsaw-4 activities, the students generally had positive thoughts. It was determined that these positive feelings were expressed as: the students enjoyed the course (51), felt relaxed (40)

and happy (6) during the course, the course aroused curiosity (3), provided students to use humor (2), made them more willing to come to the course (2) and made them feel refreshed (2) and gave them energy (10). The teacher (1) and the students (1) also stated that there was an increase in their motivation. The students (2), the guidance teacher (1) and the classroom teacher (1) expressed that the students had fun during the activities. Some sentences about students' feelings are as follows:

"English lessons were comfortable and fun. Since it was different from other lessons, we waited for our teacher to come and teach this lesson again… We wished that she would always come to our lessons and always teach our lessons." (S17)

Under the theme of "characteristics of the teaching-learning process", which emerged as a result of students' and teachers' opinions, it is found that the quality of teaching service before, during and after the activities is emphasized and these features are given in Figure 2.

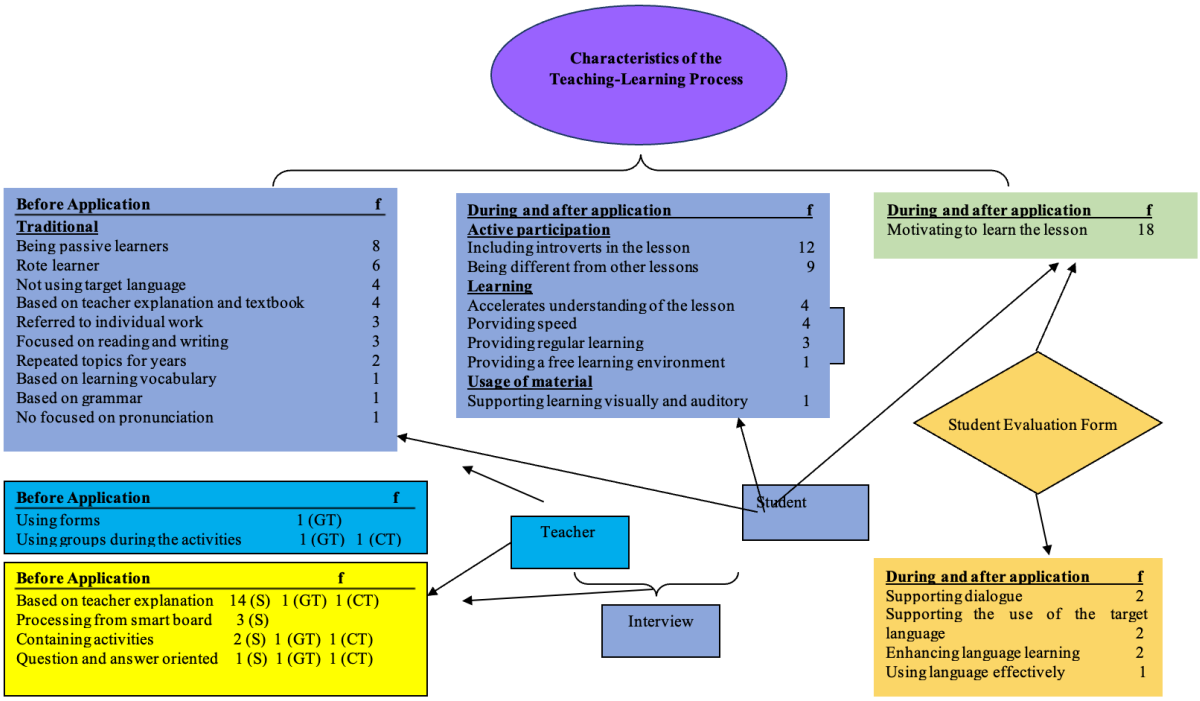

Figure 2
Student and teacher views on the characteristics of the teaching-learning process

According to Figure 2, it is seen that the student views on the lessons before the activities are; learners were passive (8), education was based on rote learning (6), target language was not used (4), progress was based on teacher explanation and textbook (4), individual work was mostly used (3), lessons were taught from the board (3), reading and writing were focused (3), the same topics were repeated for years (2). When the statements are evaluated as a whole, it is seen that the lessons were conducted with the traditional method before the activities. It was also emphasized that English lessons were based on learning vocabulary (1) and grammar (1). Pronunciation was not focused in the lessons (1). Student statements regarding these findings are given below:

"I felt good and positive emotions. When it was time for English lessons, I felt like we were not going to sit and listen to a lesson for 40 minutes, but we were going to do something like an activity or a game. That's why it was more enjoyable to wait for the lesson." (S3)

"…But now that we can joke around freely, we have the opportunity to learn more comfortably. It has also

become easier for us to learn. That's why it has become more permanent." (S23)

When the teachers' opinions were examined before the activities; it was seen that the teachers used forms in the lessons (1-GT) and benefited from groups in the activities (1-GT, 1-CT). According to the teachers and students; the lessons were generally carried out based on the teacher's explanation (14-S, 1-GT, 1-CT), processed from the smart board (3-S), included only question and answer (1-S, 1-GT, 1-CT) or different activities (2-S, 1-GT, 1-CT). The statements are as follows:

"In the past, we would usually learn by writing and we would just memorize. Now we talked to each other and make practices. There would be very few activities. We would just do the activities in the book. Now we have done more." (S1)
"I ask what can be done in the solution steps of the questions. I help them solve the questions together by forming groups." (SÖ)

It is stated that the activities based on the Jigsaw-4 can motivate to learn the lesson (18), include the introverts in the lesson (12) and the lessons are different from other lessons (9). These exercises facilitate understanding the lesson (4), provide speed (4) and regular learning (3), help establishing dialogue (2), support the use of the target language (2), develop language learning (2), provide a free learning environment (1) and effective use of the language (1), support learning visually and auditorily (1). Student and teacher statements are as follows:

"We realized that we practiced more when the activities were well prepared. We saw the difference between our motivation when we worked alone in the classroom and when we worked together. It contributed positively." (S13)
"I use Q&A during conferences. I generally use teaching through presentation. I use methods such as education based on activities and group learning." (GT)

Another theme was expressed as "contribution" and this contribution was to language skills, lessons and academic development. The codes related to this theme are given in Figure 3.

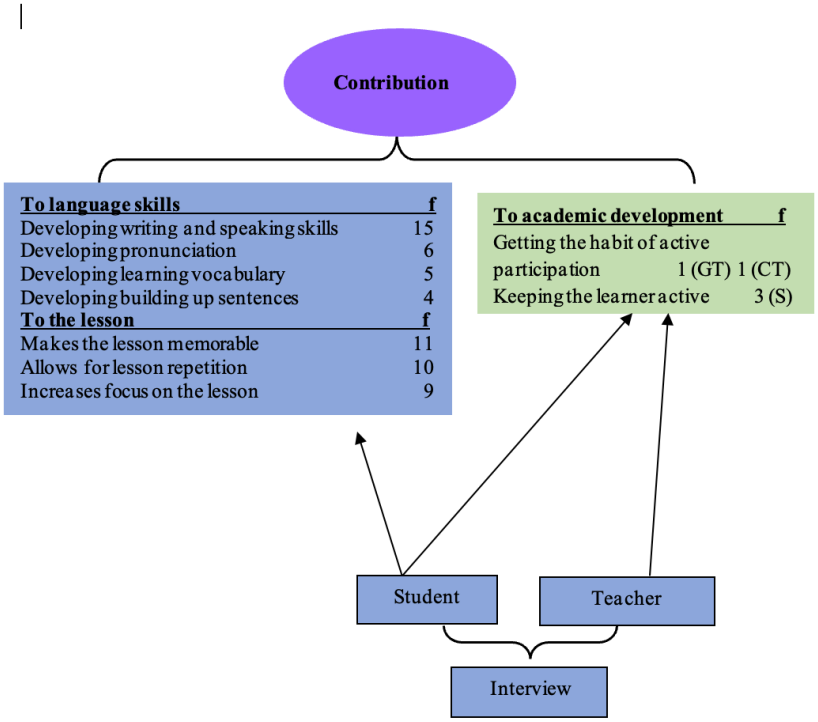

Figure 3
Student and teacher opinions on the contributions of the Jigsaw-4 technique

According to Figure 3, it is seen that the students stated the Jigsaw-4 technique contributed to the lesson and language skills, while students and teachers both stated that it contributed to academic development. The students added that this technique improved their writing and speaking skills in a foreign language the most (15), followed by word pronunciation (6), learning words (5) and sentence formation (4). In addition, the students thought that this technique made the lesson memorable (11), provided lesson repetition for the students (10) and increased their focus on the lesson (9). The student statements are as follows:

"I had fun and it was more memorable. Permanent learning took place." (S22)
"… I had difficulty saying English words and speaking in public. I thought I would not be able to pronounce them correctly. … The best part about group work was that we got to know our friends who we had never talked to or sat together with, even though we had been studying together for two years." (S23)

It was observed that students and teachers gained the habit of active participation in the lesson with the Jigsaw-4 technique (1-GT, 1-CT) and that these activities kept the learner active (3-S). Student and teacher statements are as follows:

"It was generally nice and fun because we love English. Our participation was also quite good." (S21)
"Since they were in a busy exam year, they did fun activities together with your studies. The students actively participated in the lesson and I think it made positive contributions to our students psychologically." (GT)

5. Discussion and Conclusion

In this part, both qualitative and quantitative data obtained were discussed in the same paragraph, which is related to each other, the similarities and differences with the studies in the literature were included.

At the end of the overall Jigsaw-4 activities, an increase was determined in the experimental group's pre-post test score, and this increase was significant in favor of the post-test. This result shows that the Jigsaw-4 activities were effective in achieving the outcomes in the experimental group. In parallel with this finding, it was concluded that methods such as drama and CL applied in English lessons are student-centered (Wichadee, 2007; Yoowiwat, 2007) and there was a positive effect on students' academic success (Kıymaz, 2021). In the literature, it is claimed that the Jigsaw technique has also a positive effect on academic success (Doymuş et al., 2007; Gürbüz et al., 2012). Results parallel to the research results have been reached in areas other than language learning. For example, the academic success in the social studies course (Demir & Çakmak, 2023), mathematics (Kaya & Gökalp, 2021) and science courses (Ajaja & Eravwoke, 2010) increased. So, it can be said that the academic success in the courses conducted with the CL technique were generally significantly higher than the courses conducted with traditional methods.

As a result of the control group's achievement test results; the low average obtained from the test before the activities were accepted as an indicator that the students' English skills were not sufficient. At the end of the activities, it was found that there was an increase in the students' scores. This increase was significant in favor of the post-test. According to this result, it could be said that the teaching-learning activities based on teacher explanation applied in the control group were effective in achieving the outcomes. This increase is thought to be normal, and the reason for this can be shown as the traditional method of teaching in the control group. When both groups are compared, it is seen that this increase is small in the control group (the experimental group = 24.62, the control group = 11.12). Similarly, Karataş and Özcan (2015) also found an increase in the control group's academic success as a result of activities used in a CL environment.

As a result of comparing the mean difference scores (difference=post-pretest), the experimental group's mean was higher than control groups and this difference between the means was significant.

So, it can be said that the Jigsaw-4 technique is more effective in increasing academic success in English language teaching. It is also emphasized in the literature that group working helps students to learn and remember information better than individual learning (D. Johnson & Johnson, 2000; Li et al., 2010; Nihalani et al., 2010; Tuan & Neomy, 2007). In addition, Kyndt et al. (2013) included 65 articles in the meta-analysis study examining the effects of CL, and it was determined that students in CL environments were more successful than students in traditional learning environments.

A significant difference was found between the pre-test and post-test scores of the language self-efficacy of the experimental group before and after the activities. According to this result, it can be said that the activities increased the self-efficacy of the experimental group students in English course. Similarly, Bayat (2004) emphasized that the experimental group's attitudes towards CL and the English reading course were positive. It was concluded in different studies that CL in social studies courses (Arslan, 2008) and music education (Kılbaş et al., 2022) improved the self-efficacy belief towards these courses and transformed the students' self-efficacy and attitudes towards the course into positive ones (Sung & Hwang, 2013; Wichadee, 2005).

It was found that the control group's language self-efficacy at the beginning and end of the activities showed no statistically significant difference between the pre-test and post-test scores. So, it can be said that teaching-learning activities based on teacher explanation had no effect on students' self-efficacy. In support of this finding, Kyndt et al. (2013) focused on 65 articles examining the effects of CL, and determined that student attitude scores were higher in the CL environment than in the traditional learning environment.

As a result of comparing the ESEBS difference scores (difference = post -pr test) of both groups, it was determined that the difference was significant and it was in favor of the experimental group. According to this result; it can be said that Jigsaw-4 technique was effective on the students' language self-efficacy. Considering that the experimental group's success score average was also higher than the control group, it can be said that there is a positive relationship between success and language self-efficacy. In the literature, this result is also supported by different studies (Aktürk & Aylaz, 2013; Tılfarlıoğlu & Çiftçi, 2011). Contrary to this finding, Bayat (2004) determined that no significant difference was reached between the pre-test and post-test attitude scores of both groups towards the English course.

It is thought that the increase in student success and self-efficacy in English in the experimental group is also affected by the opinions of students and teachers about the activities based on the Jigsaw-4 technique. In this context, the themes of "emotions", "characteristics of the teaching-learning process" and "contribution" are also discussed under the title of success.

The theme of "emotions" was created with the help of student interviews, guidance and class teacher interviews and evaluation forms. In the theme of "emotions", it was found that the students in the experimental group had generally negative feelings about the English class before the activities. The negative feelings are: the majority of them did not like the English course, were prejudiced against the course and found the teaching of English courses boring. It was also found that a small number of the students disliked group working and studying English. In addition to the negative feelings, there were a few students stated that they liked English course. Most of the students had positive thoughts about the course and the activities after the activities. The most repeated positive feelings were that the students enjoyed the course and felt relaxed during the activities. In the previous studies, it is stated that students' anxiety (Kartal, 2014; Kurtuluş, 2001) and learners' irritability decrease with collaborative activities (Fijalkow, 1993), students enjoy these lessons (Gümüş & Buluç, 2007) and have positive feelings towards the lesson (Demir, 2012; Kartal, 2014; Lai & Wu, 2006; Wichadee, 2007). It has also been concluded that these practices make students feel happy and arouse curiosity, provide them with the opportunity to use their sense of humor, make them come to the lesson more willingly, make them feel refreshed and energize the students. Similarly, CL is claimed to

improve students' social skills, enable them to learn from each other, help reduce their anxiety, make them love both the lesson and the school (Kurtuluş, 2001), increase the energy in the classroom (Gezgin et al., 2022), and students' desire to learn (Gezgin et al., 2022; Yazedjian & Kolkhorst, 2007) in the literature. In addition, teachers and students stated that their motivation increased. In support of this finding, it is stated that CL activities contribute to the personal development of students by motivating them to participate (Brecke & Jensen, 2007). Similarly, it is emphasized in different studies that CL supports students' intrinsic motivation (Kurtuluş, 2001) and helps them develop their learning motivation (Al-Yaseen, 2014; Kartal, 2014; Sung & Hwang, 2013). Another result of the research is that students and teachers state that students feel relaxed and energetic at the end of the activities. Similarly, it is found that small groups formed during cooperative activities make students feel more comfortable (Cuseo, 1996). In addition, students, guidance teachers and classroom teachers state that students have fun during the activities. In parallel with this finding, Kartal (2014) states that cooperative activities make the lesson more enjoyable for students.

One of the features that support student success is the "characteristics of the teaching learning process." This feature was emphasized by teachers and students before, during and after the activities. According to the student views before the activities; the traditional method was used, they were passive during these lessons, the education was rote-learning, the target language was not used, the lessons progressed based on teacher explanation and the textbook, individual work was mostly used, the lessons were taught from the board, they focused on reading and writing, and the same subjects were repeated for years. In addition, it was emphasized that English lessons were conducted with vocabulary learning and grammar and the lessons did not focus on pronunciation. Similarly, it is seen that teachers do not give up their old habits and prefer traditional methods (Can & Işık-Can, 2014; Kasap, 2019; Yaman, 2018) and do not go beyond the textbooks (Can & Işık-Can, 2014) in studies on teaching English in Turkey,

After the activities, it was stated that such activities were motivating to learn the course, introverting participation in the course and being different from other courses, facilitating understanding, providing speed and regular learning, helping to establish dialogue, supporting the use of the target language, developing language learning, providing a free learning environment and effective use of the language and supported learning visually and auditorily. Gümüş and Buluç (2007) conducted Turkish courses with the CL and determined that students understood the course better with this method. In different studies in the literature, it has been found that the CL helps to communicate in a foreign language and provide a non-threatening learning environment (Slavin, 1995), reduces students' shyness (Baghcheghi et al., 2011), help them construct new knowledge (Li et al., 2010; Tuan & Neomy, 2007), create a positive learning environment in terms of practicing English (Al-Yaseen, 2014), help them understand the course better (Al-Sheedi, 2009; Li et al., 2010) and learn more when compared to the usual lessons (Holloway, 2004; Smialek & Boburka, 2006; Wichadee, 2007), enable more successful students to help weaker students (Smialek & Boburka, 2006; Tuan & Neomy, 2007), provide students to ask questions in a group (Smialek & Boburka, 2006). During and after the activities, students stated that the Jigsaw-4 technique contributed to the lesson and language skills, while students and teachers stated that it contributed to academic development. Students stated that this technique improved their writing and speaking skills in a foreign language the most, word pronunciation, word learning and sentence formation. Similar studies in the literature emphasized that students' reading and writing skills in a foreign language and word learning improved (Fekri, 2016) and more success is achieved in learning words with the help of the CL (Öztürk & Tanrıverdi, 2019; Yavuz & Arslan, 2018).

Students stated this technique made the lesson memorable, provided repetition and increased their focus on the lesson. Similar studies in the literature also state that everyone's participation in the lesson is ensured with CL (Gümüş & Buluç, 2007; Kartal, 2014). In a similar study conducted using the

observation method in a CL environment, it was determined that all students actively participated (Gezgin et al., 2022). It has been determined that the CL provides the development of their grammar, listening and reading skills, vocabulary (Yavuz & Arslan, 2018), helps remembering words (Öztürk & Tanrıverdi, 2019) and creates a difference in terms of reading motivation (Shaaban, 2006).

6. Suggestions

It can be suggested that CL activities should be added to the curriculum of English and other courses at different levels of education in order to improve English success. Longitudinal studies can be developed by starting in different types of schools and in the early years of high school. This research was conducted with one experimental and one control group. For this reason, conducting future studies by increasing the number of experimental and control groups can make significant contributions to the literature. Another result of the research is that the instructor who plans and carries out the Jigsaw-4 activities should have some characteristics. Therefore, in-service trainings can be planned for teachers to gain professional and personal experiences.

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