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Developing Writing Skills, Writing Attitudes and Motivation through Educational Games: Action Research

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Abstract

This study aims to improve the writing skills, motivation towards writing, and writing attitudes of elementary school students through educational games by eliminating the problems they encounter in the writing process. The study was designed within the scope of cooperative action research, and criterion sampling was used for the sample selection. The data collection tools included Writing Attitude Scale, Writing Motivation Scale, Analytical Rubric for Assessing writing, interview forms, educational games, and action plans. The qualitative and quantitative data were analyzed using a series of data analysis techniques. The quantitative results showed that the participants' post-test mean scores in such dimensions of using educational games as attitude, motivation, and writing skill development in the writing teaching process were higher than their pre-test mean scores. The qualitative results revealed that the educational games could be used as an effective technique in teaching writing to develop participants' positive attitudes towards writing, increasing their motivation, improving their writing skills, and eliminating writing problems. Based on the results, it could be stated that different techniques, such as educational games, should take place more in the process by considering the affective factors in teaching writing.

Keywords: Writing skills, Writing motivation, Attitude towards writing, Action research, Educational game.

Introduction

Writing skill, which includes cognitive, affective, physiological, and social processes, is a complex and difficult skill to acquire among the four language skills. Writing in the form of a mere narration skill is insufficient to express the depth of writing. In contrast, writing is a versatile tool to achieve the goals through ways of learning and teaching. Written language is used in establishing interpersonal communication by integrating vocabulary with content knowledge, transferring feelings and thoughts in written forms, organizing thoughts, and being a mediator of learning.

Considering that writing, an activity requiring the use of high-level skills and supporting development, covers many literacies beyond alphabet writing, the importance of teaching writing at all levels cannot e denied. The process of teaching writing can include the dimensions of knowledge about writing and writing issues, producing and processing texts, motivation, and directing thoughts and actions through appropriate strategies to achieve writing goals (Graham, 1997). In other words, teaching writing involves studying on the development of knowledge and skills about exhibiting many behaviors, from applying spelling, punctuation and grammar rules, emphasizing important expressions with the use of appropriate words to presenting the content as a meaningful whole. In addition, the further purpose is to develop writing strategies such as planning and revising through writing instruction (Graham, 2006; Nightingale, 1988).

It is emphasized that writing instruction increases students' ability to acquire, understand, construct and reflect new information (Defazio, et al., 2010; Graham & Perrin, 2007; Klein, 2000; Montelongo & Herter, 2010), supports developing language skills (Graham & Hebert, 2011; Huy, 2015) and leads to academic success (Handayani & Siregar, 2013; Waring, 2007). Moreover, students have the opportunity to verbally convey their feelings and thoughts to their peers and teachers through written products (Moses & Mohamad, 2019). In another saying, writing activities help students develop their writing and verbal communication skills.

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Whether teaching first or second language, it is possible to encounter some problems in teaching instruction. Although the problems encountered in the writing process are specific to the learner, the following problems arising from the teaching method used in the language teaching process (Al-Khasawneh, 2010; Batur & Özdil, 2018) are seen as the most common problems in writing instruction literature: lack of learner/teacher motivation and/or interest (Zimmerman, 1989), reluctance to share written products (Huy, 2015), failure to receive appropriate feedback (Lee, 2003; Sigurðardóttir, 2010), making mistakes in writing due to poor vocabulary knowledge and grammatical inadequacy (Ayık, 2019; Moses & Mohamad, 2019; Rabab'ah, 2003; Sheeba, 2016; Zorbaz, 2010) and other similar problems. Troia (2003) suggests that the problems students experience in effective writing can be attributed to the difficulties in executing and arranging the writing teaching process in terms of the dimensions of creating, planning, and reviewing this process. Similarly, Mustaque (2014) states that although students have knowledge about vocabulary and grammar rules, they encounter some problems in structuring that knowledge. In this respect, when the literature is generally examined, the importance of cognitive skills in the writing teaching process draws attention. Besides these cognitive factors, affective components are also important in terms of becoming qualified in writing skills.

Considering the effect of factors like anxiety, interest, attitude, and motivation on the writing process and success in writing in terms of the affective dimension (Bruning & Horn, 2000; Buyse, 2006; Chea & Pel, 2013; Graham, 2006; Hamp-Lyons & Heasley,1987; Hidi & Boscolo, 2006; Lam & Law, 2007; Lo & Hyland, 2007; McClenny, 2010; McGettigan, 2008; McLeod, 1987; Pajares, 2003), affective structures should be carefully constructed in the teaching process. In fact, with the teaching of writing, students at all levels of education are expected to be capable of not only expressing themselves correctly in written forms, but also making sense of the importance of writing skills. Carroll (1990) emphasizes that it is difficult for students to realize the importance of writing in terms of learning when they only interpret the writing process as the correct learning of spelling and grammar and reflecting it on their writing. Considering this possibility, it could be stated students should get actively and willingly involved in the activities to make the learning experience meaningful and valuable in writing activities.

The fact that most of the writing activities in the teaching process depend on classroom practices makes it necessary to form the instructional design carefully. In this respect, encouraging students to participate in writing activities and improving their writing skills require a systematic pragmatic approach. Accordingly, the teacher should first focus on the writing skills students need to develop and then decide on selecting appropriate methods, techniques, and tools to be used in the teaching process. Once the target skill areas and implementation tools have been identified, the teacher can begin focusing on what topic can be used to engage students and can go on to think about how to involve students in the process, considering the types of activities that interest students. In other words, the teacher should provide a context where effective learning can be achieved in the target area by choosing an appropriate topic in line with students' interests and needs. However, it could be stated that a teacher who can pragmatically integrate these goals can expect an effective writing teaching process to occur (Adas & Bakir, 2013).

In order for students to produce good-quality written products in the future, writing activities should be carried out starting from the early stages of education (Ling, 2016). The time devoted to teaching writing is very important in this respect. However, it is seen that teachers cannot allocate enough time to writing instruction for various reasons (inability to keep up with the curriculum, insufficient course hours, student reluctance, etc.) (Huy, 2015; National Commission on Writing, 2003). In this respect, the possible consequences of failure to allocate enough time to teaching writing draws the attention in the literature. Stein, Dixon, and Isaacson (1994) argue that many mistakes in writing may result from too little time devoted to teaching writing or from poorly designed writing instruction to meet the learning needs of many students. According to Leki, Cumming, and Silva (2008), lack of studies on the development of writing skills and teachers' lack of knowledge on this subject cause students to have difficulties in writing skills. In other words, inadequate involvement of writing in the teaching process, the inadequacies of teachers and failure to design the teaching process in line with the purposes cause the writing skill not to develop.

In addition to the importance of the time devoted to teaching writing, teachers also need to use different approaches, methods and techniques to draw students' attention to writing. In literature, it is seen that different methods and techniques are used to improve students' writing skills in terms of various variables. Whether in the mother tongue or in the foreign language teaching process, positive results are encountered when the methods and techniques used in language teaching focus on language skills, which need to be developed. In the process of teaching first language as well as foreign language, positive results are encountered when the methods and techniques to be used in language teaching are employed in the focus of language skills that need to be developed. For example, in their research, Adas and Bakir (2013) revealed that the processes designed with the

blended learning method to improve students' writing skills were effective in developing students' writing skills. Göçen (2019) concluded that creative writing practices had positive influence on elementary school students' writing success, motivation and attitudes. Handayani and Siregar (2013), who investigated the effect of a process-oriented writing approach on writing skills, found that this approach significantly increased students' success in writing expository texts.

Although there are many different techniques to be used in writing instruction, it could be stated that one of these techniques is the educational game technique. It was demonstrated by meta-evaluations (Genç-Ersoy, 2021) that educational games are a very effective technique in student acquisition, primarily in supporting the development of language skills. Real communication environments created with educational games are important language learning environments that can be used in this context (Larsen-Freeman, 2000; Lee, 1979), and it is possible to develop language skills in these environments (Christakis, Zimmerman & Garrison, 2007; Lee, 1995; Wrigth, Betteridge & Buckby, 2006). Whether it is a digital environment or not, it is stated that educational games increase student motivation in the development of language skills, support communication, and cooperation among students, increase students' willingness to participate, support learning tasks, and facilitate learning (Aydın, 2014; Christakis, Zimmerman & Garrison, 2007; Hung, Sun &Yu, 2015; Jubran, 2019; Valipour & Aidinlou, 2014; Wright, Betteridge & Buckby, 2006).

Undoubtedly, educational games can be used in the development of all language skills. The opinions put forward about the use of educational games in the process of writing instruction, which was particularly the focus of this study as well, defend that it saves learning writing from boringness (Allen et al., 2014; Jackson & McNamara, 2013), improve writing skills (Windiyani, Boeriswati & Sumantri, 2019), and supports higher-order thinking skills in creating written products (Song, 2008).

The fact that the language used in the writing process has aspects different from the language used in speaking may cause students to approach writing more cautiously. The use of educational games in writing instruction emerges as an effective technique to prevent this situation because games are not only fun for learners; they can also provide many reasons to use their writing skills to play the game. In this respect, it would not be wrong to say that it is an effective way to experience the language in terms of providing emotional support in the development of learners' language skills in teaching writing with educational games. In fact, some studies revealed that educational games provide learners with affective support in such dimensions as attitude and motivation in writing (Allen, et.al., 2014; Ayık, 2019; Chang, Liao & Chan, 2021). In addition, educational games allow students to get the feedback they need and correct writing mistakes as they use their writing skills (Hadfield & Hadfield, 1990). The reasons show that educational games can make positive contributions to learners in the process of teaching writing.

Considering the students' need for intrinsic motivation in the process of teaching writing and existing support in the teaching environment (Lam & Law, 2007), educational games could be an effective technique in eliminating the problems experienced by students and improving their writing skills. In this respect, the writing skill, with its important place in people's lives, should be understood with all its dimensions, and the focus should be on developing it as a whole with other language skills. Teachers competent in using the educational game technique should undertake an important role in allowing students to make sense of writing skills, solve writing problems, and develop positive attitudes and high motivation towards writing. For the aforementioned reasons, the fact that the expert elementary school teacher, one of the researchers of this study with four years of experience teaching elementary school students, collaborated with field experts and applied scientific research-based methods to solve the writing-related problems encountered by these students was deemed beneficial for both the students' development and the teacher's professional development. In addition, aiming to solve class-specific problems through meaningful and enriched instructional designs in the classroom will gain an important place in the literature.

In this respect, this study aimed to improve elementary school 4th-grade students' writing skills, attitudes toward writing, and motivation in writing through educational games by eliminating the problems they faced in the writing process. The study also seeks to determine the average scores of students' skills, attitudes, and motivation related to writing and to examine the difference that educational game applications make on these variables. In line with these purposes, the research questions can be listed as follows:

- What are the problems experienced by elementary school 4th-grade students in their writing processes?
- What are elementary school 4th-grade students' attitudes towards writing?
- What is the motivation of 4th-grade elementary school students in writing?

- Do educational game applications significantly affect the average scores of elementary school students regarding the development of writing skills, their attitudes towards writing and their motivation to write?
- What are the students' opinions about the educational game applications carried out?

Method

This study aimed to determine the problems elementary school 4th grade students face in the process of performing writing and to improve their writing skills, attitudes, and motivations towards writing through educational games. Accordingly, the study was designed within the scope of cooperative action research. Cooperative action research is a type of practice-oriented action research in which the researcher and practitioner collaborate to identify problem areas in practice, potential causes of these problems, and potential interventions (Holter & Schwartz-Barcott, 1993; cited in Yıldırım & Şimşek, 2018).

The Study Group

Considering the nature of action research, it is a type of research used to understand or solve a teaching problem by collecting and analyzing data about a topic or problem that teachers have determined as the basis of the teaching process (Calhoun, 1994), the problem to be studied on must be specific to that class. In this respect, while determining the study group, the criterion sampling technique was used to examine the problem situations in depth. Accordingly, the students who had problems in the writing process were included in the sample, considering the teacher's observation before the intervention, the opinions obtained from the interviews before the intervention, and the scores in writing before the intervention. In line with this, 23 elementary school 4th grade students who had some problems in the writing process were included in the research sample, taking into account the teacher's observations before the application, the opinions obtained from the interviews held before the application, and the scores of the writing studies carried out before the application. The participants in the study group were elementary school 4th grade in a public school in 2020-2021 in Marmaris, a district of the province of Muğla. The study group consisted of 17 male and six female students. The students in the study group had been in the same class with their teacher for at least three and at most four years. The writing scores of the students in the study group before the application were ten points at the highest and four points at the lowest. When their writing scores were evaluated in general, it was seen that they achieved a low achievement score.

Data Collection Tools

The data collection tools in the study consisted of the Writing Attitude Scale (WAS), Writing Motivation Scale (WMS), Analytical Rubric for Assessing Writing (ARAW), and educational games and interview forms developed by the researchers. Other data sources in the study were written products of the study group, unstructured observation, student diaries, and researcher diaries.

Writing Attitude Scale (WAS): The scale developed by Susar Kırmızı (2009) was a valid and reliable tool in determining elementary school 4th and 5th grade students' attitudes towards writing. The scale included 34 items developed as a 5-point Likert-type and rated as "Totally Appropriate, Fairly Appropriate, Partially Appropriate, Slightly Appropriate, Totally inappropriate". The factor eigenvalues of the items varied between 0.50 and 0.86. The Cronbach Alpha reliability coefficient of the scale was .90. The weighted raw score each student could get from the scale was a minimum of 34 and a maximum of 170.

Writing Motivation Scale (WMS): The scale developed by Öztürk (2013) was a valid and reliable tool for determining the motivation of elementary school 4th-grade students in writing. The scale had a five-factor structure, and 22 items developed as a 5-point Likert-type and rated as "Very suitable for me, Suitable for me, Undecided, Not suitable for me, Not very suitable for me". These factors were "positive attitude towards writing", "having a purpose", "failure to convey ideas into writing", "shared writing", and "writing effort". The Cronbach Alpha reliability coefficient of the scale was .81.

Analytical Rubric for Assessing Writing (ARAW): It was a measurement tool developed by Bilican Demir and Yıldırım (2019) to evaluate the writing skills of elementary school students, and the validity and reliability studies of the scale were carried out. The tool allowed evaluation of students' writing with a four-point scoring rubric according to the criteria of content, discourse management, intelligibility, language use appropriate to the context, spelling, and grammar. The scores to be obtained according to the level of meeting the criteria in question were "Beginner level = 1 point", "Improvement needed= 2 points", "Acceptable level = 3 points," and

"Fully successful = 4 points". The lowest score to be obtained for each writing was 6, while the highest score was 24.

Interview Forms: Three interview forms were developed by the researchers and employed before, during and after the intervention, and constituted the qualitative data collection tools in the study. Semi-structured interview forms were applied through face-to-face interviews with the participants in the study group. The first form was an interview form created to determine the problems related to writing skills before the intervention. With this form, the problems experienced by the study group in writing were determined via the participants' responses to the questions, and answers were sought to form action plans for problem solving and to let the participants overcome these problems. A total of five questions and their probes were included in the first interview form. In the focus of the first form, there were questions about how the participants made sense of the writing process and what they needed in relation to the things that challenged them in the writing process.

The second interview form was applied to the study group during the intervention. The form's content was prepared to determine the functionality of the action plans, the problems experienced and the students' views about writing. In line with this, seven questions were included in the form. In the focus of this form, there were questions about determining what had changed in the participants' writing as a result of the application.

The third interview form, employed at the end of the intervention, consisted of semi-structured questions allowing the study group to evaluate the intervention and the development of their writing as a whole. Before the interview forms were applied, they were examined and evaluated by field experts regarding form, content and meaning. In line with the feedback received from the field experts, some changes were made in the formal and semantic dimensions of the forms, and the forms were finalized.

Educational Games: During the interventions, writing-focused educational games aiming to improve the study group's writing skills, attitudes and motivations were used. Accordingly, for use in the intervention, eight educational games named ice cubes, garden for writing, word track, I'm dubbing, wheel of fortune game, I'm creating my story, dice and puss in the corner were developed by the researchers. Two specialists in the field of educational games in language instruction were asked for their thoughts on the games and their approval was gained. Although different sub-dimensions for the development of writing skills were studied with the educational games developed, the affective dimension was supported in all games by considering the entertainment factor and education. The goals of these educational games are mentioned briefly below.

Ice cubes is an educational game that aims to support the grammar dimension to support the study group to make sentences according to their level. The use of synonyms, antonyms and words with real and metaphorical meanings was also supported with the game.

The garden for writing game is an educational game that aims to develop and improve the comprehensibility of the writing process. With this game, the study group was supported to design writing processes that would support the use of words without repetition by working on the ambiguities in their written products.

Word track is an educational game that aims to teach vocabulary to improve the vocabulary knowledge of the participants in the study group. With this game, the purpose was to help develop content, one of the dimensions of writing skills.

With the game of *I'm dubbing*, the purpose was to develop the discourse management of the participants in the study group. The game aimed to use connectors and linguistic expressions to enrich the text within the context determined.

With the *Wheel of Fortune game,* the purpose was to help the study group improve their use of language appropriate to the context in the writing process. Appropriate writing products were developed for the contexts on the wheel of fortune in the game.
With the *dice game,* the purpose was to improve the writing skills of the study group in the dimension of spelling rules. In line with this, the focus was on emphasizing spelling and punctuation rules and creating products according to the rules.

The games of *I'm creating my story, dice,* and *puss in the corner,* the purpose was to develop and put into practice all aspects of the writing process (content, discourse, intelligibility, context, spelling rules, grammar) as a whole with the corner games. These two games, which are included in the action process and are the last games, played an important role in the presentation of the development status of the writing problems of the

working group. These two games, which were included in the action process as the last games, played an important role in presenting the development and writing problems of the study group.

Written products: Written products were used to determine the study group and to identify the writing problems. In line with this, four writing studies were carried out with the study group before the application. Within this scope, the study group carried out writing activities covering the text types and topics envisaged by the Turkish curriculum. In the implementation process, with eight educational games embedded in three action plans, a total of eight writing exercises were done at the end of the teaching process. The writing activities were carried out with the focus of controlled, guided, creative and free writing techniques.

Diaries: Diaries included students' diaries and researcher's diary. The practitioner researcher kept the researcher's diary throughout the application in order to prevent researcher bias and ensure reliability. On the other hand, students' diaries were written by the study group after eight educational games applied similarly to the written products. In terms of the content of the diaries, the study group was asked to express what they felt during the application, the difficulties they experienced and their own developments. The data obtained from the diaries in question were used to support the data obtained from the writing scores, scales, and interviews. In this respect, the expressions especially in the affective dimension gained importance.

Unstructured observation: The practitioner researcher collected the unstructured observation form throughout the application processes. The participant and action cycle dimensions were taken into account in the observation process. In accordance with this, the difficulties encountered in writing during the application process, the responses received from the participants, and the experiences linked to the problem-solving process were all recorded.

Action process

The process followed for implementing the action plans employed in the study is given in Table 1.

Table 1. Action process

Period	Time	Action Taken	Data Sources
Before the application	Week 1	Free writing (1st writing activity)	Products of writing Observation form Researcher's diary
	Week 2	Writing on Atatürk (2nd writing activity)	Products of writing Observation form Researcher's diary
	Week 3	Writing on Republic (3rd writing activity)	Products of writing Observation form Researcher's diary
	Week 4	Narrative writing (4th writing activity)	Products of writing Observation form Researcher's diary
	Weeks 1 and 6	Holding the first interviews to determine the study group	First interview form Observation form Researcher's diary
During the application	Week 7	Application of the attitude and motivation scales as pre-tests	WAS WMS Student's diary Researcher's diary Observation form
	Weeks 7, 9 and 10	Application of the action plan (Implementation of the educational games, carrying out the writing activities)	Products of writing Researcher's diary Observation form
	Week 10	Holding the second interview with the study group	Second interview form Observation form Researcher's diary
	Weeks 11, 12 and 13	Carrying on the application of the action plan (Implementation of the educational games, carrying out the writing activities)	Products of writing Student's diary Researcher's diary Observation form
	Week 14	Application of the attitude and motivation scales as post-tests	WAS WMS Researcher's diary

			Observation form
After the application	Week 15 and 16	Holding the third interviews with the study group	Third interview form Observation form Researcher's diary

A 36-hour application was carried out in the action process to develop writing skills, attitude towards writing and motivation with the help of educational games. Three different action plans were employed in a total of six weeks of the 16-week application. There were plans designed with educational games as the focal point of the action plans. These plans were intended to improve the dimensions of the study group's main writing problems. These problems included issues with the content (being related to the given topic or event such as selected words, sentences, idioms, examples, etc.), discourse management (including linguistic expressions, expansions, and connectors that will enrich the writing in the context determined), and intelligibility (ambiguity in conveying the text content) (sentences made according to the level obeying grammatical rules).

Validity and Reliability

The stages proposed by Johnson (2002) were taken into account in ensuring accuracy and credibility as well as validity and reliability in action research. Accordingly, long-term observation, keeping researcher's diary to prevent researcher bias, long-term interaction, data triangulation, expert review, detailed description, and reporting were carried out in the study. In addition, a validity committee of three field experts was established to examine, discuss, and evaluate the applications and to make additional arrangements during the research process. A total of four meetings were held with the validity committee, once before the intervention, once after, and twice during the intervention.

Data Collection

The research process was conducted in a total of 16 weeks, including determining the problem situation (6 weeks), application of the pre-test and post-test (2 weeks), application of the action plans (6 weeks), and determining the opinions after the intervention (2 weeks). In the study, to identify the problems experienced by the participants in the writing processes, free and subject-oriented or genre-contextual writing activities were carried out once in a week or in four weeks by the study group regarding the themes and subjects, which were the natural elements of the curriculum. During the writing activities, the practitioner researcher kept observation notes and a researcher's diary. The writing activities were evaluated with ARAW, which determined the study group and the sub-dimensions of writing skills that needed to be developed. In the following process, the first interviews were held to make sense of the problems experienced by the students in the writing processes, their attitudes towards writing and their motivation in writing and to enable them to express themselves verbally as well. With the interviews, a road map was drawn for which action would be useful in solving the problem. In this way, the problem situation and the study group were determined before the intervention. An action plan was created for the solution of the problem situations revealed in the light of the writing products of the study group, the themes and concepts emerging as a result of the first interviews, and the attitude and motivation scores, and the researchers developed eight educational games that were thought to help solve the problem.

WAS and WMS pre-tests were applied to the study group before the action plan was put into practice. At this stage, the practitioner researcher asked the participants to share their experiences, feelings, and so on via the diaries distributed to them in which they could express what was important during the intervention. The participant diaries were used to provide qualitative data to help the researchers reveal how the participants made sense of the intervention process. In the following process, the action plan was implemented in a way that an educational game was played every week for eight weeks. Although the playing times of the educational games varied between 30 and 40 minutes, the educational game's preparation, playing and evaluation were carried out in three lesson hours in a week. In addition, at least one writing study was conducted within the scope of each educational game. Accordingly, each writing product was evaluated with ARAW, and the scores were recorded. After the three-week action plan intervention, second interviews were held to examine the situation, to determine the problems experienced in the action process, to identify the aspects needing improvement and to get the evaluations of the study group regarding the process. After the second interviews, the action plan application continued, and the second three-week intervention cycle was started. Similar to the first three weeks, following the action plan, writing activities were carried out within the scope of the educational games, and the development of the writing skills of the study group was evaluated. Following the completion of the process that took place over the course of six weeks, the action plan was finalized when the issue was resolved. This was accomplished by taking into account the rise in the writing scores of the study group as well as the data collected through the interviews.Just after the action plan was finalized, the post-tests were applied, and the

changes in the attitudes and motivations of the study group were evaluated. After the intervention process, third interviews were held with the study group to allow them to evaluate themselves, the process and their writing.

Data Analysis

Before, during, and after the intervention, a variety of data analysis approaches were employed to assess the qualitative and quantitative data collected in the study.After the intervention, data were examined and interpreted as a whole. For the analysis of the quantitative data, the data obtained through WAS and WMS were transferred to SPSS 24 package program, and paired samples t-tests were conducted for attitude, motivation, and success. The writing products obtained from the study group were analyzed with ARAW, and the numerical data obtained were presented as total scores and in tables to show the progress.

For the analysis of the qualitative data, interviews, researcher's diary, participants' diaries, and observation forms were analyzed separately by the researchers using content analysis. NVIVO 12 program and an online site for concept formation were used to determine and model the relationships between the themes. In this respect, the process was followed by coding the data, finding the themes, organizing the codes and themes, and defining and interpreting the findings.

Results

Quantitative Results

This section presents the analysis results of the findings obtained through Writing Attitude Scale (WAS), Writing Motivation Scale (WMS) and Analytical Rubric for Assessing writing used in the study. Table 2. prepared accordingly summarizes the descriptive statistics of the study.

Table 2. Descriptive statistics regarding the quantitative data

	X̄	Max	Min	Sd	Variance	Skewness	Kurtosis
WAS_1	111.608	130.000	68.000	.481	235.249	-1.403	1.863
WAS_2	138.652	151.000	114.000	.481	69.964	-1.139	2.148
WMS_1	77.217	106.000	47.000	.481	182.451	-.118	.514
WMS_2	95.130	107.000	84.000	.481	43.028	.024	-.951
WS_1	47.60	80.000	25.000	.481	227.976	.563	-.066
WS_2	72.34	96.000	50.000	.481	277.874	.005	-1.644

WAS_1: WAS pretest; WAS_2: WAS posttest; WMS_1: WMS pretest; WMS_2: WMS posttest; WS_1: Writing Pre-intervention Score; WS_2: Writing Post- intervention Score

As summarized in Table 2. the post-test mean scores in all three measurement tools were higher than the pre-test means scores. Byrne (2010) suggested a value range of -2 to +2 for skewness and -7 to +7 for kurtosis. When evaluated together with these findings, the outlier analyses and histogram graphs revealed that the data had a normal distribution. To test whether the differences between the mean scores obtained from the data collection tools were significant, paired samples t-tests were performed by considering the pretest-posttest mean scores of each variable. Table 3. summarizes the t-test results for attitude towards writing:

Table 3. Paired samples t-test results regarding attitude toward writing

Measure	N	X̄	Sd	df	p	t
WAS_1	23	111.60	15.33	22	<.001	-7.178
WAS_2	23	138.65	8.36			

WAS_1: WAS pretest; WAS_2: WAS posttest

As can be seen in Table 3. there was a significant difference in favor of the post-test between the post-test and pre-test scores of the Writing Attitude Scale ($t_{(22)}$=-7.178, p<.001). The findings showed the participants' attitudes increased as a result of the intervention. Table 4. presents the results of the paired samples t-test regarding motivation in writing, and the results of the paired samples t-test regarding the writing success of the participants are shown in Table 5.

Table 4. Paired samples t-test results regarding motivation in writing

Measure	N	X	Sd	df	p	t
WMS_1	23	77.21	2.81	22	<.001	-7.268
WMS_2	23	95.13	1.36			

WMS_1: WMS pretest; WMS_2: WMS posttest

According to Table 4. there was a significant difference between the post-test and pre-test scores of the Writing Motivation Scale in favor of the post-test ($t_{(22)}$=-7.268, p=<.001). The findings revealed that the participants' motivation increased in line with the intervention, similar to the findings regarding the attitude towards writing.

Table 5. Paired samples t-test results regarding success in writing

Measure	N	X	Sd	df	p	t
WS_1	23	47.60	15.09	22	<.001	-7.070
WS_2	23	72.34	16.66			

WS_1: The writing success score before the intervention; WS_2: The writing success score after the intervention

As can be seen in Table 5, there was a significant difference between the participants' pre-intervention and post-intervention scores, in favor of the post-intervention scores (X=72.34) ($t_{(22)}$=-7.070, p<.001). The findings showed that the participants' writing success increased in line with the intervention, similar to the findings related to motivation and attitude towards writing.

Qualitative Results

The study's qualitative findings are presented in two sub-titles: the results obtained from the interviews and those obtained from the diaries and observations. Accordingly, the findings obtained from the interviews held before, during and after the intervention are given, and then the findings obtained via the participant diaries, researcher diary, and observation notes are presented.

Results Obtained via the Interviews before the Intervention

The findings obtained before the intervention and while determining the study group showed that the participants' views were gathered under three main themes. Accordingly, the sub-themes and concepts under the main themes of "Challenges in the Writing Process" and "Needs related to the development of the Writing Process" are presented in Figure 1. and Figure 2. The sub-themes and concepts that emerged regarding the challenges in the writing process are shown in Figure 1.

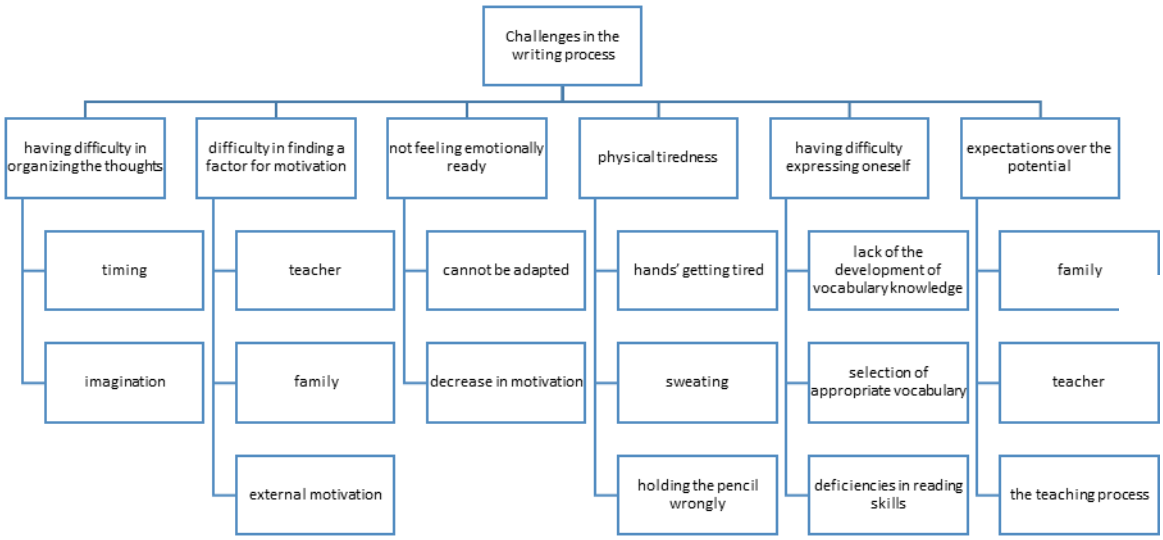

Figure 1. Challenges in the writing process

The research results showed that the participants had difficulties in organizing their thoughts during the writing process, choosing appropriate words because they could not express themselves due to the lack of development of their vocabulary, and finding an external motivational element, especially the teacher and their families. In addition, the participants did not feel emotionally ready; they felt unmotivated and unable to adapt to the writing process as a teaching process, and their families and teachers had expectations of their own potential.

Another difficulty the participants encountered in the writing process was the symptoms of physical fatigue. One of the remarkable results was that long and difficult writing tasks given above the potential and previous erroneous learning, such as inappropriately holding the pencil, caused fatigue of the hands and stress factors such as sweating, which appears as a physical expression.

Figure 2. presents what the participants needed to overcome the difficulties they encountered in the writing process and to improve their writing skills.

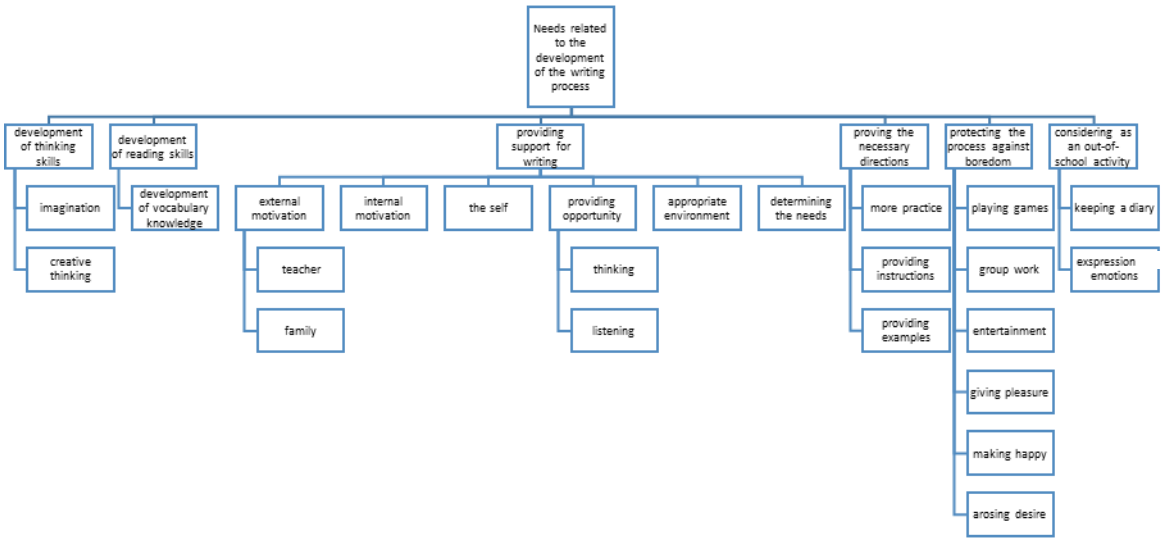

Figure 2. Needs related to the development of the writing process

The finding related to the need for learning with games, which was stated by almost all the participants in meeting the participants' needs in developing their writing skills, also shaped the implementation process of this study. The fact that the writing process should be fun by getting rid of the boredom, arouse desire, make them happy, give pleasure and provide the opportunity to work in groups constituted the basis of the requirements in the development of the writing process. In addition, the research findings showed that guidance for the development of thinking and reading skills and presentation of instructions and examples in the writing process should be provided for the participants to overcome the difficulties they encountered and to improve the writing process should be provided.

In providing writing support, it is noteworthy that teachers and families should especially support the participants in terms of providing a suitable environment for them, determining their needs, giving them opportunities to think and rest, and providing motivational sources. The results obtained before the intervention showed that some compelling factors were effective for the participants to make sense of the writing process and that these factors caused them to develop negative attitudes and low motivation during the writing process. In addition, it was revealed that the teachers and families had a role in the emergence of these factors and that certain things were needed to overcome the difficulties encountered and to develop writing skills.

Results Obtained via the Interviews Held During the Intervention

The results obtained via the interviews held during the intervention showed that the participants' views were gathered under three main themes. Accordingly, the sub-themes and concepts under the main themes of "Making sense of the Writing Process," "Adventure of Writing" and "Development of Writing Skills" are presented in Figure 3., Figure 4. and Figure 5. In figures, lined arrows depict the relationship between the concepts and the sub-themes, while dashed arrows indicate the interrelationships among the concepts.

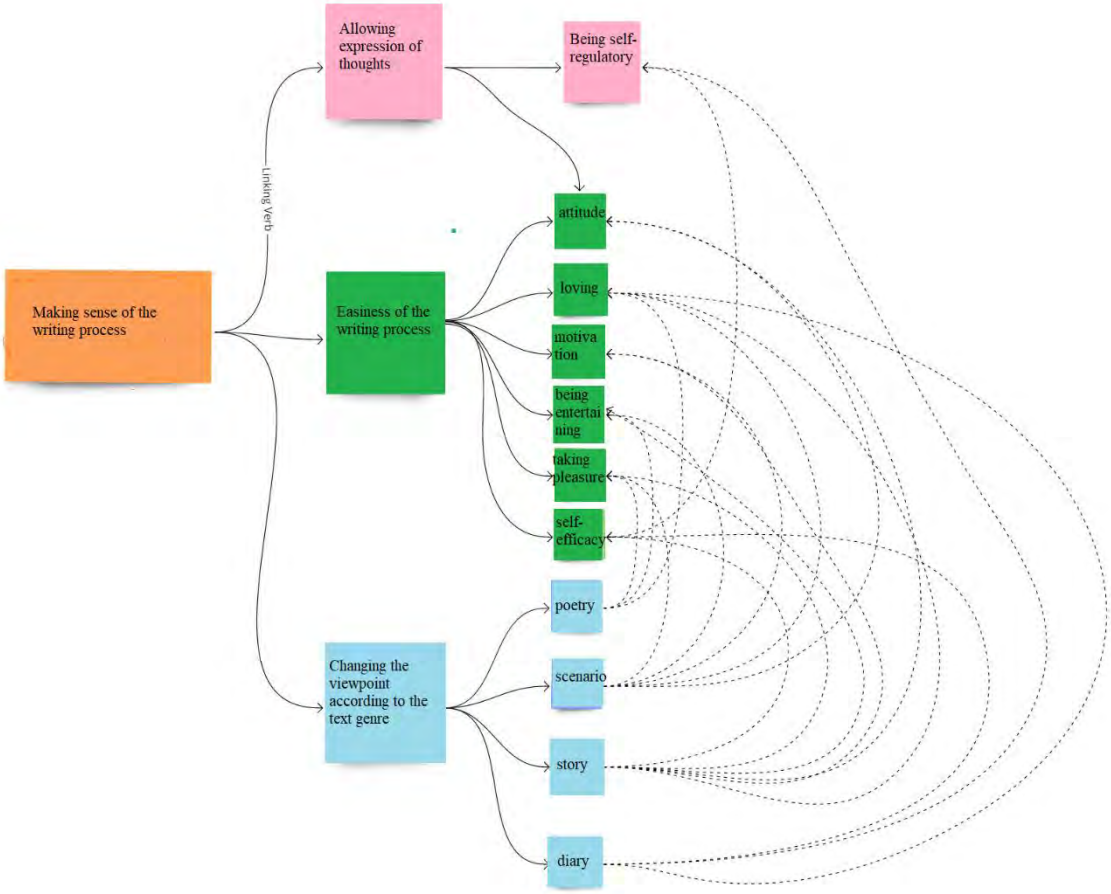

Figure 3. Making sense of the writing process with the applications

With the applications in Figure 3, some developments occurred in the participants' making sense of the writing process compared to the pre-intervention process. As stated particularly in the previous sections, it was noteworthy that the factors effective in expressing thoughts disappeared with the intervention process and that being self-regulatory was emphasized to be effective on ensuring the expression of thoughts. In this respect, the writing activities carried out through educational games increased the participants' awareness in making sense of the writing process, allowed them to find the writing process easier than before the intervention, and helped them develop positive attitudes. In addition, it was noteworthy that lack of self-confidence was replaced by self-confidence; that the feeling of not liking writing was replaced by the feeling of liking it; that dislike of writing and the feeling of finding it boring were replaced by fun and entertainment; and that motivation for the writing process improved. Additionally, similar to the results obtained before the intervention, the sub-theme of the change in viewpoint in accordance with the genre of writing was expressed with similar concepts. The point that distinguished the result as mentioned above from the results obtained before the intervention was that the writing activities carried out with the highlighted text genres mentioned was found entertaining by the participants. They had the motivation and positive attitudes towards writing in the mentioned writing genres.

Figure 4. presents the sub-themes regarding the applications carried out to improve writing skills through educational games and their reflections on the conceptual relations under the sub-themes. In figures, lined arrows depict the relationship between the concepts and the sub-themes, while dashed arrows indicate the interrelationships among the concepts.

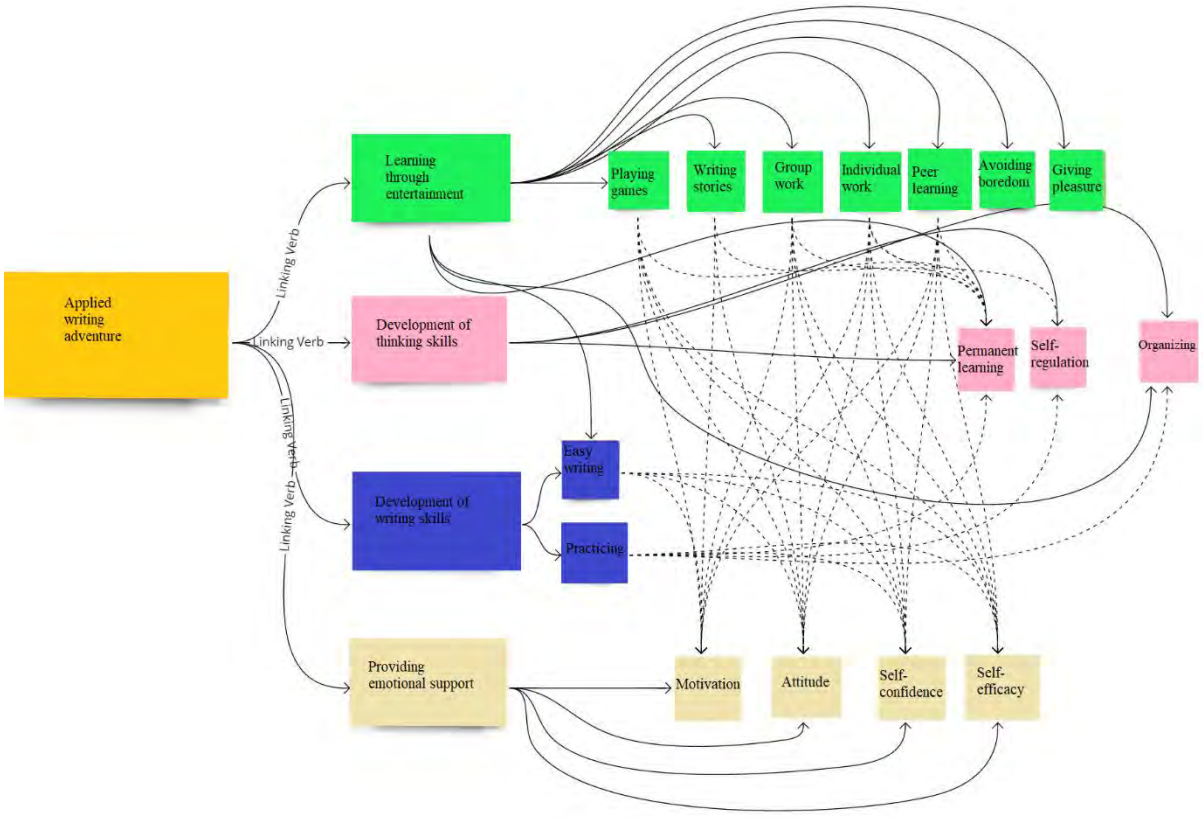

Figure 4. Applied writing adventure

According to Figure 4. it was noteworthy that the sub-themes and the concepts related to the sub-themes affected each other and had a direct intense relationship. The results showed that the participants evaluated writing practices supported with educational games in the dimensions of learning with fun, improving thinking and writing skills, and providing emotional support.

Other results included that applications such as game playing and story writing carried out in groups or individually saved the learning process from being boring, made the process fun and enjoyable, and supported permanent learning, peer learning and self-regulation skills. In addition to learning by having fun, other remarkable results obtained in the study included the fact that the participants could write more easily in the context of the development of writing skills and that the participants could receive emotional support such as motivation, attitude, self-efficacy and self-confidence with the learning process and development.

Figure 5. presents the effect of writing activities supported with educational games on the development of writing skills. In figures, lined arrows depict the relationship between the concepts and the sub-themes, while dashed arrows indicate the interrelationships among the concepts.

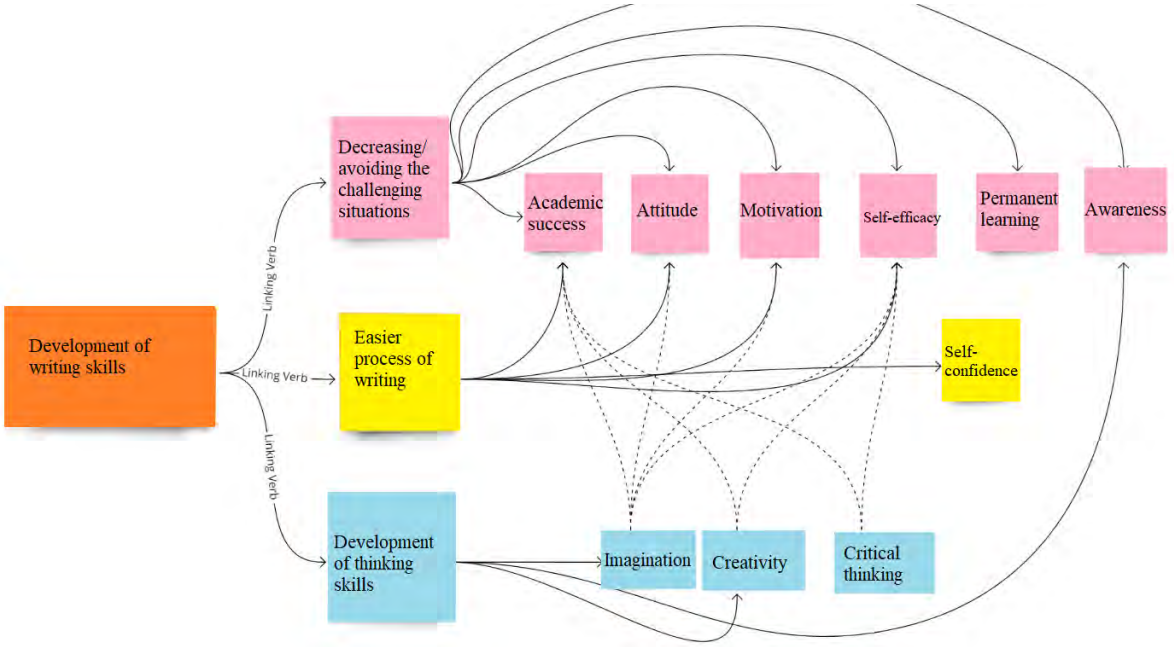

Figure 5. Development of writing skills

The results showed that the applications carried out through educational games contributed to developing the participants' writing skills. The participants emphasized that the thinking skills they needed were supported in the development of writing skills before the intervention and that the difficulties in the writing process decreased or disappeared.

Other notable results include that participants perceive the writing process more easily due to the disappearance of the difficulties encountered, that their academic success and self-confidence increase accordingly, that sustained learning is ensured, and that they develop their motivation and a positive attitude toward writing.Moreover, the participants' awareness of the improvement of their writing skills with the applications increased as well.

The Results Obtained via the Interviews Held After the intervention

The results obtained via the interviews after the intervention showed that the sub-themes were gathered under the main theme of "Use of educational games in teaching writing". Accordingly, the sub-themes under the main theme and the codes associated with the sub-themes are presented in Figure 6.

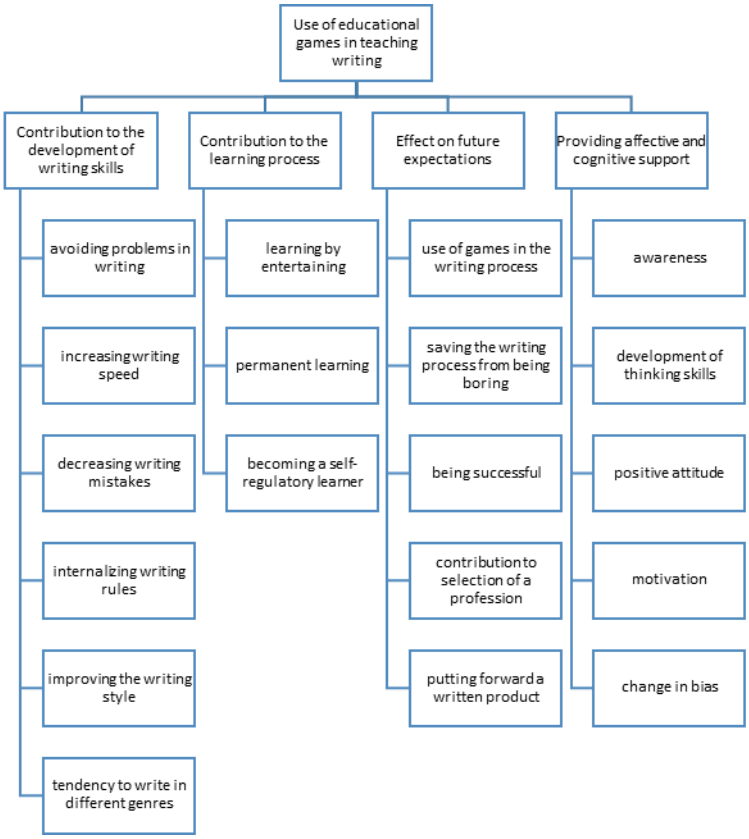

Figure 6. Use of educational games in teaching writing

As seen in Figure 6. the themes of "Contribution to the development of writing skills", "Contribution to the learning process", "Effect on future expectations" and "Providing emotional and cognitive support" were found under the theme of "Use of educational games in teaching writing". The results showed that the use of educational games in writing classes helped to eliminate or reduce writing problems, internalize writing rules, increase writing speed, improve writing style, and encourage participants to write in different text genres (narrative, informational, memoir, biography, etc.) and reduce spelling errors.The use of educational games contributed not only to the development of writing skills but also to the learning process. Other results included the fact that the use of educational games in teaching writing supported learner autonomy, allowed the participants to become self-regulating learners and have fun, and led to permanent learning.

The results showed that the dimensions the participants needed to be supported in teaching writing before the intervention supported the intervention. Besides overcoming the difficulties experienced in the writing process, one of the important results was that the intervention provided the participants with affective and cognitive support. The desirable results included the fact that the participants developed positive attitudes toward learning writing, increased their motivation to write, and eliminated their negative prejudices about the writing process. Moreover, the participants were aware of the development of high-level thinking skills such as imagination, creativity, critical thinking, and empathetic thinking they emphasized throughout the process.

It was seen that educational games also affected the participants' expectations regarding the future of teaching writing. After the intervention, the participants had a high level of expectation about the use of educational games as the boringness of the teaching process was removed. Furthermore, the participants' gains in teaching writing conducted with educational games would allow them to become successful in the future and to put forward written products and would contribute to their choice of profession.

Results Obtained via the Diaries

The results of the analysis of the diaries kept by the study group during the intervention are shown in Figure 7 and Figure 8. Figure 7. shows the sub-themes and the concepts related to the sub-themes emerging within the framework of the main theme of the effect of educational games on the learning process. Figure 8. presents the sub-themes and the concepts emerging within the framework of the main theme of the effect of educational

games on skill development. While the lined arrows shown in the figures indicated the concepts with which the sub-themes were related, the dashed arrows indicated the relations of the concepts with each other.

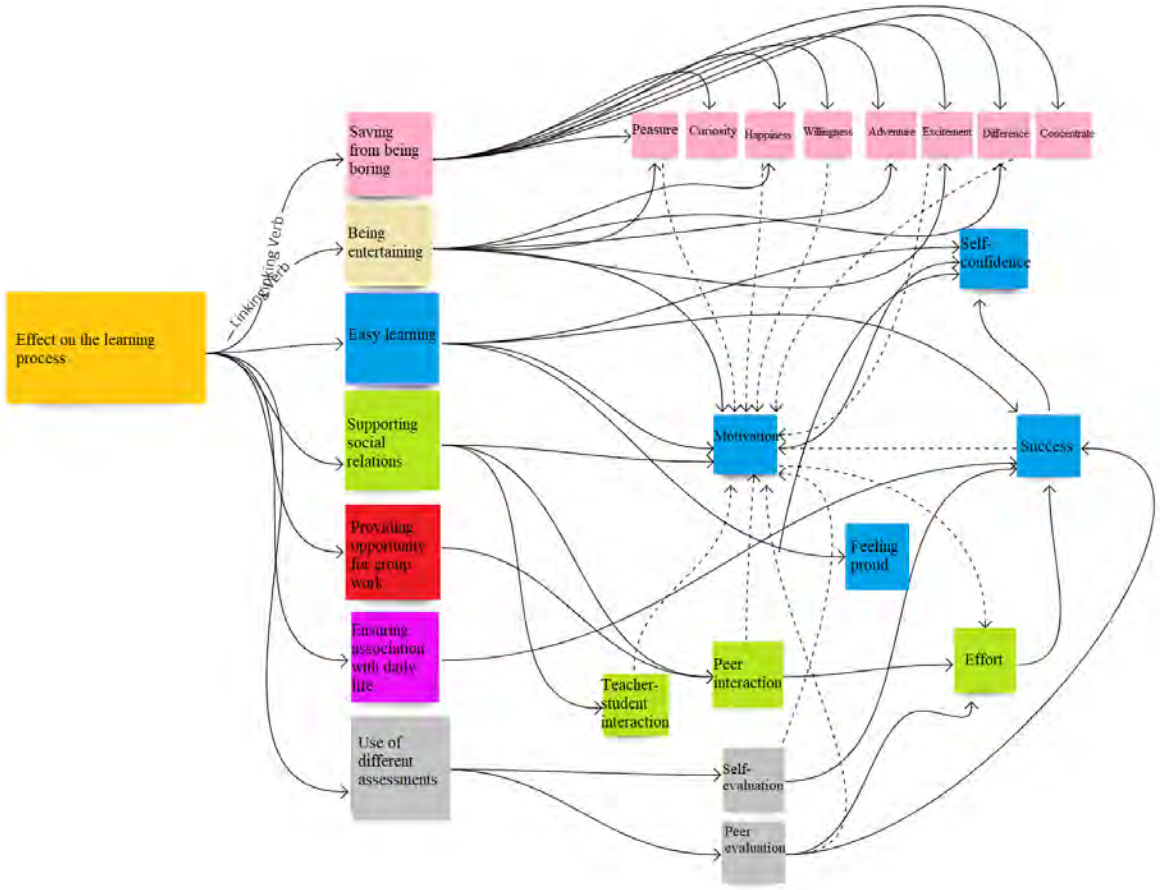

Figure 7. Effect of the educational games on the learning process

When the participants' diaries kept after the intervention of the educational games were analyzed, the sub-themes and concepts were reached within the framework of two main themes. One of the main themes obtained in this respect was the effect of educational games on the learning process, as can be seen in Figure 7. According to the participants' diaries, the writing activities based on educational games had a number of positive effects on the students. The educational games used in the Turkish Language class made the teaching process more enjoyable by preventing boredom; the students enjoyed this process and felt excitement and enthusiasm for the activity and lesson; their sense of curiosity grew; and the games helped them be present.

A further contribution of educational games to the teaching process was that they facilitated learning, supported social relationships in the teaching process, provided opportunities for group work, helped establish an association with everyday life, and supported the use of alternative assessments such as peer- and self-evaluation.. When the concepts related to the sub-themes mentioned above were examined, it was seen that the participants were in positive interaction with their peers and teachers during the teaching process; that they made an effort to maintain this interaction and the process; that this effort led them to success; and that in relation to these all, their self-confidence and motivation increased in internal, external and environmental respects.

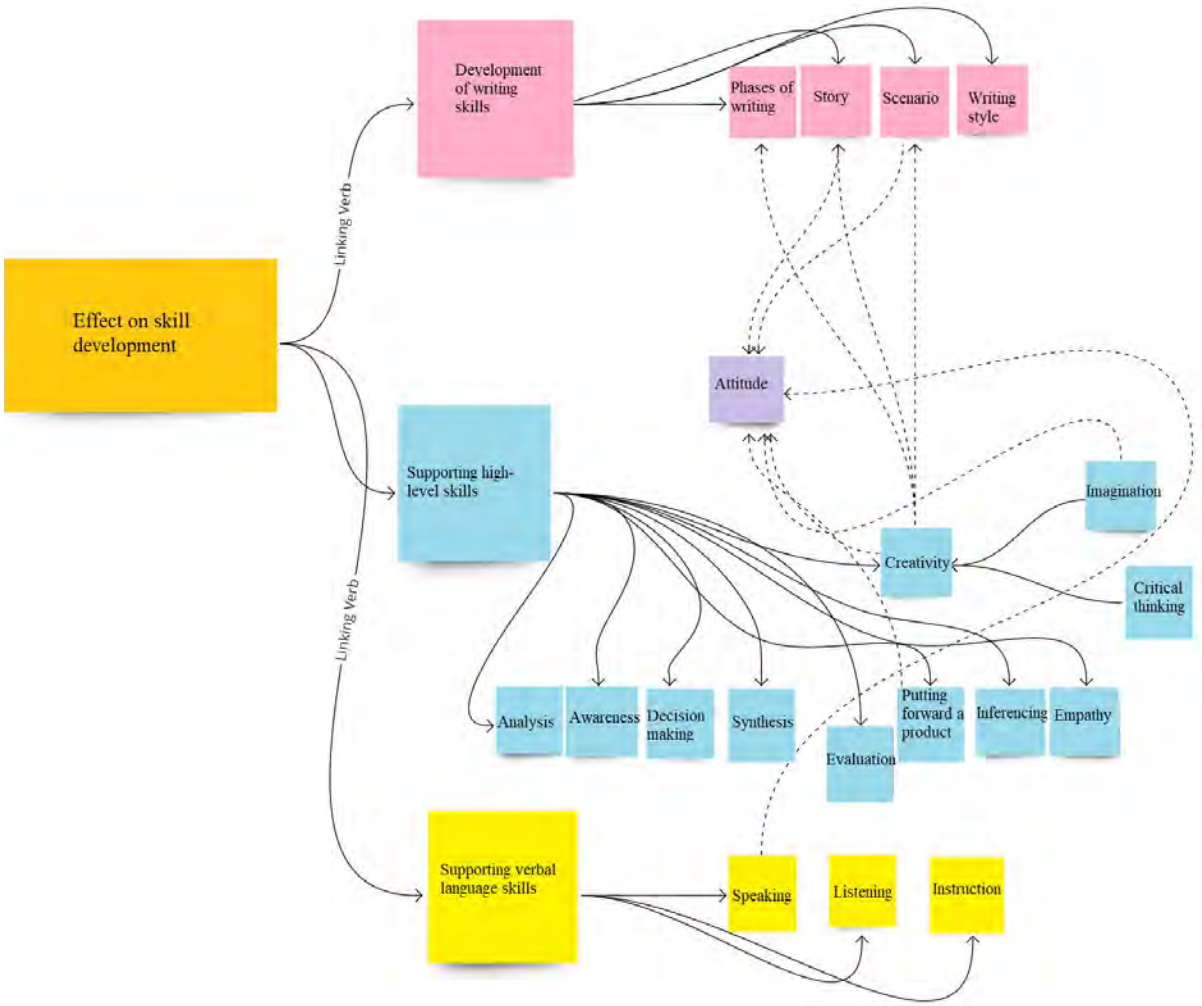

Figure 8. Effect of the educational games on skill development

The second theme reached as a result of the analyses of the participants' diaries was the theme of effect on skill development. The educational games employed in the teaching process supported the development of the participants' writing skills in the dimensions of form and phases of the writing process. Another result was related to the support provided for creativity and imagination in creating stories and scenarios among the writing genres.

In addition to supporting the writing skills, some participants' speaking and listening skills were also supported with educational games. It was also remarkable that the participants frequently referred to high-level skills in the diaries and that the participants had a positive attitude towards the concepts emerging within the framework of the sub-themes. In this respect, when the results obtained via the participants' diaries were evaluated from a general point of view, it was revealed that the process of teaching writing conducted through educational games positively affected the participants' motivation and attitudes. Similarly, the researcher's diaries and observation notes demonstrated that the findings supported the results obtained during the research process. Concerning the results obtained, the following notes regarding the attitudes and motivations of the participants were prominent:

"……Their demands for this game were very high. They had a lot of fun playing the game. They didn't have any trouble writing because they knew something about the story they would write. They combined these events, changed and transformed them, and wrote new stories." (Researcher diary-Dice game) "The students were very happy when they saw the map and the dice. They were dying to play. They focused on the statement to be made after the number came out with excitement" (Observation note-Dice game).

"… They waited impatiently for those who had written before them. They read over and over what their friends wrote. They had a lot of fun the activity also helped the students gain values such as group cooperation, teamwork and team spirit… It was very impressive for them to act together …" (Researcher diary-Writing garden game).

"The silence of the video caught their attention. While watching people, it was clear from their facial expressions what they thought they would write" (Observation note-Dubbing game).

Discussion and Conclusion

It is important to apply scientific research methods to solve problems by determining the competencies or deficiencies in language teaching processes. It is valuable both for the development of their students and for the professional development of teachers. Teachers who are especially responsible for the design of practical processes in the classroom, work in collaboration with field experts in language skills that need to be developed in their students. Besides all, the purpose should be to solve class-specific problems through meaningful and enriched instructional designs in the classroom. The reasons mentioned reveal the necessity of studying problem-solving-oriented designs such as action research in teaching processes (Genç-Ersoy & Ersoy, 2021). In this respect, important results were obtained in the study regarding providing affective support and skill development and revealing the effect of problem-solving approaches to avoiding probable problems.

In the study, several important results were obtained via the approaches employing both quantitative and qualitative paradigms. The quantitative results showed that the participants' post-test mean scores in the dimensions of attitude, motivation, and writing skill development due to the use of educational games in the writing teaching process were higher than their pre-test mean scores. Accordingly, educational games increased the participants' motivation and attitudes towards writing and their success in writing skills. The results were quite valuable considering the contribution of positive attitudes towards writing (Graham, Berninger & Fan, 2007) and motivation to write (Schunk & Zimmerman, 1994) to the success in and development of writing. In terms of the effect of educational games on writing attitude, the results were parallel to those obtained by Erol, Erdem, and Akkaya (2021), Kara and Akın (2018), Liu et al. (2021) and Stojković and Jerotijević (2011), while the results were inconsistent with those reported by İnal and Korkmaz (2019).

The results that educational games contributed to the development of the student's writing skills were consistent with those obtained in applied studies in the literature (Alparslan, 2019; Ayık, 2019; Batur & Özdil, 2018; Özkara & Alparslan, 2019; Uçar & Kan, 2020). Similarly, the results regarding the dimension of the effect of educational games on motivation in writing were parallel to those reported by Ayık (2019), Graham (2006), and Yavuz and Okur (2021). In this respect, consistent with the related literature, the research results showed that the educational games designed for writing support the development of writing skills by increasing individuals' motivation and attitudes towards writing.

When the qualitative results were evaluated, the effect of affective factors on the participants' making sense of the writing process was remarkable. One important result was that previous failure in writing caused reluctance, anxiety, dislike of writing, lack of self-confidence, stress factors, negative attitude towards the writing process, and lack of motivation in the future. Undoubtedly, affective factors regarding writing are important predictors of success in writing (Alluhaybi, 2015; Amiri & Saeedi, 2017; Sarkhoush, 2013), and students with high anxiety and negative feelings about writing tend to be weaker writers (Cheng, Horwitz & Schallert, 1999; Faigley, Daly & Witte, 1981). Moreover, positive attitudes towards writing are exhibited by better writers (Knudson, 1991). Therefore, the purpose should primarily be to eliminate negative situations by determining affective factors in making sense of the writing process. In this study, negative life experiences, which are effective in making sense of the writing process, evolved positively in line with the intervention. The results also showed that participants found writing easier than before the intervention, developed a positive attitude, lack of self-confidence was replaced by self-confidence, felt dislike for writing was replaced by love for writing, dislike and boredom were replaced by fun and entertainment, and their attitude and motivation increased.

According to the results, among the problems encountered by the participants in the writing process before the intervention of the educational games was the difficulties in organizing thoughts, choosing words due to insufficient vocabulary knowledge, and long and difficult writing tasks given above the potential. Students are supposed to organize their ideas to write on a particular subject, and they are also expected to formulate and transfer their ideas in linguistically correct ways (Zimmermann, 2000) and to use appropriate words in this transfer. Undoubtedly, any negativity in these stages will affect the entire writing process. In this respect, controlled writing, guided writing, recreating a written text, free writing, note taking, summarizing, and other techniques could be used to prevent writing problems by considering the cognitive factors in the writing process. Having expectations above the student's level in the writing process may cause them to have difficulties in having a writing purpose and transferring their competencies to the writing process. Students should always be at the center of the writing activity. Accordingly, in the writing process, students should be presented with clear and meaningful situations that will motivate them to write within the framework of topics that students are

not unfamiliar with by taking into account the principles of teaching writing appropriate to the characteristics of student development (Tama & Mc Clain, 1998). Allowing students to make choices according to their interests and needs among the offered options can help solve these problems. The result that the students tended to agree that writing was more fun when they could choose the topic (Clark & Douglas, 2009) also supports the aforementioned suggestion.

In order to help participants overcome the obstacles they encountered in the writing process and improve their writing skills, the research revealed that the writing process should be fun by eliminating boredom, arousing enthusiasm, making you happy, being enjoyable, providing opportunities for group work, providing instructions and examples in the writing process, providing an environment conducive to writing, allowing time to think and rest, and providing students with writing prompts. The training of individuals who can easily express their thoughts and feelings in a fluent manner, who enjoy writing, and who view writing as a profession is facilitated by instructional environments that increase students' motivation to write and positively influence their writing abilities. In an effective writing process, students tend to write freely, without being under pressure, in a classroom environment where there is mental and emotional comfort, away from the fear of being judged and exposed to negative criticism (Takımcıgil Özcan, 2014). In this respect, the processes supported by educational games also used in the intervention have the potential to contribute to the establishment of these learning environments. In fact, this view was supported by the participants who thought that writing processes supported with educational games were beneficial in terms of ensuring learning with fun, developing thinking, and writing skills, and providing emotional support. Moreover, when the needs indicated by the research results and the results obtained via the writing practices supported by educational games were evaluated together, it was seen that the participants' needs in overcoming their writing problems were met.

In other words, in the context of improving writing skills, it was observed that, in addition to learning with enjoyment, the participants were able to write more easily; that they could receive emotional support such as motivation, attitude, self-efficacy, and self-confidence with the learning process and development in question; that the necessary thinking skills were supported; and that the instances of difficulty in the writing process decreased or disappeared.

When the results of the study were evaluated from a broad perspective, it was determined that the process of teaching writing with educational games helped overcome the difficulties encountered by fourth-grade students in the writing process; that the intervention provided the participants with emotional and cognitive support; that their writing skills improved; and that their writing attitude and motivation increased. In this regard, the research results demonstrated that educational games are an effective method for fostering writing skills, eradicating writing issues, and cultivating a positive attitude and enthusiasm for teaching writing.

Recommendations

The results of this study are limited by the instruments, educational games, the study group, and the academic year in which the research process was realized. Teachers could use educational games to teach writing, design the teaching process by determining what cognitive and emotional factors work well in the writing process, give more time to writing by determining what students need and what problems they are having with writing, and use various writing techniques with individual and group work in instructional environments that use educational games. In addition, future studies could be conducted to determine the effects of educational games on developing other language skills. The present study, whose study group included elementary school 4th-grade students, could be replicated with different research samples.

Author (s) Contribution Rate

The authors contributed equally throughout the research process.

Conflicts of Interest

The authors declare that there is no conflict of interest between them.

Ethical Approval

Approval for this study, dated 28.12.2020 and numbered 2020/11, was received from the Human Research Ethics Committee of the university that the first author was responsible for.

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