

Research Article

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The Effectiveness of Animation in Enhancing Story-Writing Skills Among Fourth-Grade Female Students in Jordan

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Abstract

Purpose. This study aimed to examine the effectiveness of animation in enhancing story-writing skills among fourth-grade female students in Jordan.

Method. To achieve this objective, a quasi-experimental design with an experimental and a control group was employed. The participants of the study consisted of 56 fourth-grade female students from Ruqaya Bint Al-Rasoul Basic School, affiliated with the Directorate of Education for the Taybah and Wastiah District. The participants were divided into two groups: an experimental group (n = 29) that received instruction using animation and a control group (n = 27) that was taught using the traditional method. A story-writing test was administered to both groups.

Results. The findings revealed statistically significant differences in overall and individual story-writing skills in favor of the experimental group. Among the evaluated skills, the most notable improvement was observed in idea development, followed by story setting (temporal and spatial), writing style, plot construction, and character development.

Conclusion. Based on these results, the study recommends integrating animation-based teaching strategies to enhance students' understanding of key narrative elements. Additionally, it advocates for the use of animation as an instructional tool to strengthen essential writing skills, particularly in character development and plot structuring.



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1. Introduction

Writing is an art that transforms abstract ideas into vivid expressions on paper, serving as a fundamental means of communication through which individuals convey their thoughts, emotions, and beliefs. It acts as a bridge that connects minds, fostering interaction with the surrounding world in innovative ways. Individuals document significant moments in their lives through writing, analyze phenomena, and engage with diverse cultures and perspectives. Beyond being a tool for information exchange, writing is a medium for personal growth and learning, contributing to the development of self-expression, critical thinking, and a deeper understanding of the world.

Expressive writing takes various forms at the educational level, with story-writing being a notable example of creative writing. It is a critical skill that writing education programs aim to develop among students throughout their academic journey. These skills extend beyond curricular requirements; they are essential tools that enable students to articulate their thoughts clearly, communicate effectively, and engage constructively with others. The significance of writing skills is reflected in several key aspects, including enhancing language proficiency, promoting creativity and critical thinking, and refining self-expression abilities (Al-Shammari, 2020).

Many primary school students in Jordan face difficulties in writing stories due to limited imagination, poor language skills, and a lack of confidence. They often struggle to generate creative ideas, structure their narratives, and use appropriate vocabulary. Additionally, many students have trouble maintaining coherence and flow in their writing, making their stories unclear or incomplete. This weakness can also be attributed to the deficiency in using modern teaching techniques and strategies that focus on teaching children story-writing skills in the early stages (Al-Saadi, 2009).

Conducting a study on the effectiveness of animation in enhancing children's story-writing skills is of paramount importance in today's digital age. Animation, with its captivating visuals, dynamic characters, and immersive narratives, has the potential to stimulate creativity and engage young minds in ways that traditional methods may not. By exploring how animated content can influence a child's ability to structure a narrative, use imagination, and develop linguistic skills, we can better understand its role in educational settings. Such research could provide valuable insights into how animations can be strategically used to encourage children to express themselves, enhance their writing abilities, and foster a deeper understanding of story elements, ultimately contributing to their cognitive and language development.

This study also aims to bridge the research gap in the field of Arabic and local studies by exploring the effectiveness of animation in enhancing children's story-writing skills. While previous studies have explored various educational tools for skill development, there is a lack of comprehensive research specifically focusing on how animated videos can foster creativity, narrative structure, and writing proficiency in young learners. The study seeks to fill this gap by examining how animation, with its visual and auditory elements, can stimulate cognitive processes, improve engagement, and ultimately contribute to the development of children's ability to write compelling and coherent stories.

1.1. Problem Statement

The problem addressed in this study emerged from the researcher's professional experience and observations in the field, which revealed significant difficulties among students in the basic stage, particularly in their ability to practice expressive writing. A noticeable weakness was observed in students' story-writing skills, which may be attributed to the limited use of effective instructional strategies, techniques, and tools in teaching writing. This study was designed as an experimental investigation to align with advancements in modern educational technologies and tools that foster students' creative abilities, including story-writing. Accordingly, the study aims to examine the

effectiveness of animation in enhancing the story-writing skills of fourth-grade female students in Jordan.

Specifically, the study seeks to answer the following research question:

RQ. Are there statistically significant differences at the ($\alpha = 0.05$) level between the mean performance scores of fourth-grade female students in overall and individual story-writing skills based on the teaching method (animation vs. traditional method)?

1.2. Study Significance

The Significance of this study is twofold:

- **Theoretical Significance:** This study contributes to the existing body of literature by providing insights into the elements and skills required for effective story-writing, as well as the characteristics and educational value of animation as a teaching tool. By deepening the understanding of how animation can be integrated into writing instruction, this study offers valuable theoretical foundations that future researchers may build upon. Additionally, the study's methodology, instrument, findings, and recommendations may serve as a reference for further investigations into the role of animation in enhancing various aspects of language learning.

- **Practical Significance:** The study's findings may have practical implications for educators, curriculum designers, and educational policymakers. It highlights the potential of animation in teaching language skills, particularly written expression and story-writing. The study may also raise awareness among teachers about the benefits of integrating animation into their instructional practices. Furthermore, curriculum developers may consider incorporating animation-based strategies into educational materials, while educational supervisors may organize professional development workshops to train teachers on effective methods for teaching story-writing through animation.

1.3. Study Limitations

This study is defined by specific parameters across spatial, temporal, and human boundaries. Spatially, it was conducted with a random sample of fourth-grade female students from the Taybah and Al-Wasatiya districts. Temporally, the study took place during the second semester of the 2023/2024 academic year. In terms of human boundaries, it conducted on 56 female students enrolled at Ruqayya Bint Al-Rasoul Basic School for Girls. The study's limitations also include its focus on particular story-writing elements and skills, the validity and reliability of the assessment instrument, and the procedures implemented during the research.

1.4. Conceptual and Procedural Definitions

The study includes several key terms, which are defined both conceptually and procedurally as follows:

Story:

- **Conceptual Definition:** A story is an expressive linguistic form in which the writer narrates a series of interconnected events-whether real or fictional-centered around one or more characters. The narrative often includes dialogue, description, and suspense, culminating in a climax (or "knot") that leads the reader or listener to anticipate a resolution (Lahamdani, 2015, p. 23).

- **Procedural Definition:** In this study, a story is defined as a written composition produced by fourth-grade female students, demonstrating the ability to develop a narrative based on specific story elements: idea, setting (temporal and spatial), characters, plot, and writing style. The students' proficiency in story-writing was assessed using a specially designed story-writing test.

Animation:

- Conceptual Definition: Animation is defined as "the process of displaying a series of still, drawn, or computer-generated images in rapid succession to create the illusion of movement, based on the phenomenon of persistence of vision" (Boukhalt, 2020, p. 15).
- Procedural Definition: In this study, animation refers to a sequence of images or animated visuals created using Canva's animation design software to produce digital educational content. These instructional videos incorporated animated cartoon characters, audio narration, and digital tools to facilitate the teaching of story-writing skills.

Fourth Grade:

- Conceptual Definition: The fourth grade is a level within the basic education stage in Jordan, typically comprising students aged 9 to 10 years.

2. Literature Review**2.1. Story**

A story, whether oral or written, is a structured narrative of events occurring within a specific time and place, featuring character interactions and engagements with their environment. Stories aim to convey particular messages or ideas through a sequence of events that may be either realistic or fictional. Typically, a story consists of an introduction that sets the context, a development phase where events escalate towards a climax, and a resolution that provides closure to the central conflict. The effectiveness of storytelling relies on character development and the interplay of internal or external conflicts (Al-Ajmi & Al-Hosaniah 2019).

Writing a compelling story requires mastery of several skills, notably the organization of ideas and the coherent development of plot and characters. This form of writing enhances logical thinking and planning, as writers learn to construct a chronological sequence of events and employ descriptive details to convey emotions and messages. The organizational and analytical skills acquired through writing short stories contribute to the ability to structure thoughts logically and present them persuasively (Shehata, 2022).

Zayed and Al-Saadi (2006) identify key elements in story-writing that shape the overall narrative structure and contribute to its appeal and effectiveness. One such element is the theme, which writers often derive from personal experiences, cultural backgrounds, historical events, or documented sources. The message is another crucial component—it refers to the underlying idea or moral conveyed through the story, often reflecting the writer's perspective on real-life issues. Rather than presenting the message in an overt or didactic manner, writers are encouraged to embed it subtly within the narrative to keep readers engaged. The plot refers to the organization of incidents, including their development, narration, and arrangement. Plots may be cohesive, where events are interconnected and progress toward a climax before reaching a resolution, or fragmented, where events and characters are linked more loosely through time or space. Another fundamental element is the setting, which encompasses both the spatial environment—the physical and social context of the story—and the temporal environment, representing historical periods and the chronological sequence of events.

Characters are essential to narrative development. They are typically divided into main characters, who drive the story forward, and secondary characters, who support the protagonist and contribute to the unfolding of events (Hussain, 2020).

In addition to these elements, style plays a significant role in how the narrative is communicated. This involves the linguistic choices the writer makes to present events. Narrative styles may include direct narration, where the writer delivers events in a straightforward manner; first-person narration,

where the story is told from the perspective of a character involved in the plot; and epistolary narration, in which events are conveyed through letters or memoirs, offering deeper insight into both the setting and the characters (Al-Shammari, 2020).

The language used in story-writing should be clear and engaging, avoiding unnecessary complexity. Incorporating imaginative elements such as anthropomorphized animals or fantastical objects can captivate children's attention and impart valuable life lessons. Additionally, the element of conflict, which culminates in the story's climax, plays a crucial role in sustaining reader engagement (Harizi, 2021).

Moral and educational values are integral to children's stories, addressing themes such as honesty, friendship, cooperation, and respect. Interactive story-writing further enhances engagement, encouraging children to think critically and respond to unfolding events. A well-crafted story should conclude with a meaningful resolution, whether a happy ending where the protagonist achieves their goal or a thought-provoking conclusion that imparts a valuable lesson (Al-Ajmi & Al-Hosaniah, 2019).

The present study focuses on developing fourth-grade students' abilities in writing children's stories, a genre that demands a blend of creativity and the ability to present concepts in an engaging and accessible manner. Since children differ from adults in their cognitive processing and perception of the world, story-writing plays a crucial role in capturing their interest. Incorporating dialogue in children's stories fosters imagination and engagement, while narratives often carry underlying messages of adventure, suspense, and moral values.

Creativity and critical thinking are fundamental to story-writing, requiring writers to explore innovative ideas, construct imaginative worlds, and develop unique characters. The ability to craft stories enhances individuals' storytelling skills in both written and oral forms, making story-writing an enjoyable and valuable educational activity that fosters academic and personal development. Encouraging students to write stories stimulates their imagination, allowing them to create their own narrative worlds filled with characters and events. This practice strengthens their planning, organizational, and linguistic abilities, which are essential not only for writing but also for everyday communication and professional success (Shehata, 2022).

Al-Ajmi and Al-Hosaniah (2019) highlighted that engaging children in story-writing enhances their ability to think critically and analytically. This process requires students to carefully structure their stories, organize events logically, and develop characters coherently. Such cognitive engagement fosters their ability to evaluate ideas, ensuring that each component of their narrative contributes effectively to the overarching theme. Consequently, this type of thinking nurtures problem-solving skills and promotes logical decision-making.

Moreover, story-writing plays a crucial role in improving children's language and writing skills. Through this activity, students develop a richer vocabulary and learn to construct coherent and expressive sentences. Additionally, crafting a story necessitates mastery of grammar and spelling rules, as well as revising and editing for accuracy. This iterative process significantly enhances their overall writing proficiency (Ahmed et al., 2022).

Beyond linguistic development, story-writing provides children with a meaningful outlet for self-expression. Through the characters and events they create, they can indirectly communicate personal experiences and emotions, fostering greater self-awareness. Furthermore, writing serves as a therapeutic tool for managing anxiety and stress, thereby contributing to improved mental well-being (Ismail & Abu Youssef, 2017).

Engaging with peers' stories also strengthens students' social communication skills. When students read and discuss each other's narratives, they learn to present and receive constructive

feedback, enhancing their ability to engage in meaningful dialogues and debates. This interaction cultivates respect for diverse perspectives, an essential skill not only in academic settings but also in everyday life (Harizi, 2021).

Through story-writing, students develop an integrated set of skills, including creative and critical thinking, linguistic proficiency, emotional expression, and social interaction. These competencies prepare them for academic success and professional growth, fostering well-rounded individuals capable of positively engaging with the world around them.

2.2. Animation

Enhancing children's story-writing skills necessitates the integration of contemporary techniques and tools. One effective technique is the use of animation. Animated content simplifies complex concepts through visually engaging elements such as dynamic images, vibrant colors, and relatable characters. This medium captures students' attention more effectively than traditional instructional materials, facilitating a more interactive and enjoyable learning experience. As a result, animation aids in knowledge retention and academic performance (Tala, 2022).

Animation is defined as the technique of creating moving images from a sequence of still illustrations, which can be produced through hand-drawn frames or computer-generated graphics to simulate motion (Boukhalt, 2020).

Traditional animation is one of the oldest forms of animation, where movement is created by hand-drawing images. In this technique, artists draw each frame of the animation on paper, with each drawing slightly differing from the previous one. When these successive drawings are displayed rapidly, the impression of movement is created. Traditional animation is characterized by its artistic beauty and professionalism, despite being a time-consuming and labor-intensive process (Al-Omari, 2020).

Various types of animation serve different purposes. In two-dimensional animation, movement is created using digital or hand-drawn images. This technique is widely used in animated series and children's cartoons, offering a distinctive visual style that appeals to both young audiences and adults (Bdeir, 2020). In contrast, three-dimensional animation uses digital tools to create three-dimensional models, producing highly realistic visuals. This technique is commonly employed in modern films, video games, and children's storytelling, as it allows for intricate details and lifelike character movements (Abdel Hameed, 2021). Motion graphics, on the other hand, focus on animated text and graphical elements rather than character-driven animations. This style is often used in advertisements, instructional videos, and digital interfaces, providing an engaging way to present information dynamically (Zahir, 2021). Lastly, stop-motion animation involves capturing individual frames of physical objects, which are incrementally moved between shots to create the illusion of motion. This technique is frequently used to produce unique films and storytelling projects using clay figures, puppets, or other materials (Al-Gallaf, 2021).

Research indicates that animation significantly enhances students' learning experiences. Animated content supports the development of critical and creative thinking by encouraging students to analyze storylines, characters, and conflicts. This engagement enables them to approach problem-solving in innovative ways, an essential skill for both academic and professional success (Bouqaida & Mazhoud, 2021).

Work and Faggas(2021) stated that animation improves students' listening skills, as they must actively follow dialogues and narratives in animated content. Additionally, animation serves as an effective language-learning tool by introducing new vocabulary and linguistic structures in engaging contexts. Furthermore, it accommodates diverse learning needs, creating an inclusive educational environment.

A strong connection exists between animation and children's writing story abilities. Animated content serves as an inspirational medium, helping young writers visualize story elements, develop characters, and structure narratives effectively. Children gain a deeper understanding of storytelling principles by watching animated stories, enhancing their ability to craft compelling narratives (BESSADAT, 2018).

Moreover, animation helps clarify key writing story components, enabling children to comprehend plot structure, character development, and narrative flow. Students refine their story-writing technique by converting visual elements into written words and enhancing their creative expression (Harizi, 2021).

Integrating animation into the story-writing process allows children to map their narratives, create storyboards, and identify gaps in their plots. This practical application of story-writing techniques fosters a more structured and engaging writing approach (Hussain, 2020).

2.3. Previous Studies

Several studies have explored the impact of animation on students' expressive writing skills. For example, Abu Hawar (2017) conducted a study in Gaza examining the effects of animated content on fourth-grade students' writing abilities. Using an experimental design with 80 students divided into control and experimental groups, the study found significant improvements in students' writing skills exposed to animated storytelling.

Similarly, Pratama et al., (2018) investigated the influence of animated film media and foundational knowledge on primary school students' story-writing skills. Conducted in Indonesia with 40 fifth-grade students, the study revealed a positive correlation between animation exposure and improved story-writing proficiency.

Asyidiq and Akmal (2020) examined the impact of animated short films on high school students' narrative writing abilities. Their study of 36 students found that exposure to animated films enhanced students' story-writing skills and scriptwriting capabilities.

Samosa et al., (2021) explored the effects of animated video stories on third-grade students' story-writing development. The study, involving 30 students, demonstrated that animated storytelling fosters text structuring skills and enhances creative writing through visual and auditory stimuli.

Mazmurrini et al., (2023) investigated the influence of animated videos on first-grade students' writing proficiency. Conducted in Indonesia, their study of 34 students utilized an experimental approach and found that animation significantly improved students' ability to construct coherent narratives.

A review of previous studies indicates a scarcity of research on this topic within Arab educational contexts. No local studies were identified that specifically examined the impact of animation on story-writing skills. The present study aligns with prior research in terms of objectives and methodology, benefiting from these studies in developing its theoretical framework and exploring practical applications of animation in teaching story-writing to children.

3. Methodology

3.1. Study Design

This study employed an experimental approach using a quasi-experimental design with an experimental and a control group to investigate the effectiveness of animation in enhancing the story-writing skills of fourth-grade female students in Jordan. A pre-test and post-test for story-writing were administered to both groups. This methodology was used because it is a suitable option

for research in which the allocation of participants to groups cannot be fully controlled. This approach allows for studying effects in a relatively natural setting, enhancing the generalizability of the results (Brown et al., 1983).

3.2. Participants

The study was conducted on a sample of 56 fourth-grade female students enrolled at Ruqayya Bint Al-Rasoul Basic School for Girls, affiliated with the Directorate of Education for the Taybeh and Al-Wasatiya districts. The sample was selected through convenience sampling, as the researcher is a teacher for fourth-grade students at this school. The experimental and control groups were randomly assigned from the two fourth-grade classes. The experimental group ($n = 29$) received instruction using animation-based teaching methods, while the control group ($n = 27$) received instruction using traditional methods. The study was conducted during the second semester of the 2023/2024 academic year.

3.3. Instrument

Story-Writing Test

To achieve the study objectives, the researchers identified key story-writing skills targeted for improvement by reviewing the fourth-grade Arabic language curriculum and its framework in Jordan, and Previous studies, including Ahmed et al. (2022). Based on this analysis, the study identified five essential story-writing skills, with 25 performance indicators distributed among them: Story idea, Temporal and spatial setting, Character development, Story plot, and Writing style.

The final version of the story-writing test consisted of structured prompts, including illustrations and guiding questions. Students were required to examine the provided images and compose a short story of at least 20 lines, incorporating the five identified skills.

3.3.1. Validity of Instrument

The content validity of the story-writing test was established through expert review. The test was presented to a panel of nine experts, including Faculty members specializing in Arabic language curricula and teaching methods at Jordanian universities, educational supervisors, and Arabic language teachers. The experts evaluated the relevance of the story-writing elements and skills and the suitability of story topics for fourth-grade students. Based on their feedback, necessary revisions were made to refine the final version of the test.

3.3.2. Reliability of Instrument

To ensure the reliability of the story-writing test, inter-rater reliability was assessed. The test was evaluated by both the researcher and another Arabic language teacher, following a standardized scoring rubric. The reliability coefficients for each skill are presented in Table 1.

Table 1. Inter-Rater Reliability Coefficients for Story-Writing Test

Story-Writing Skill	Reliability Coefficient
Story Idea	0.77
Story Environment (Temporal & Spatial)	0.78
Character Development	0.84
Story Plot	0.88
Writing Style	0.76
Overall Reliability	0.80

The results indicate that all reliability coefficients exceeded the accepted threshold of 0.70, confirming the test's reliability for assessing students' story-writing skills.

3.3.3. Test Scoring and Evaluation

The story-writing test was evaluated using a structured rubric corresponding to five key story-writing skills. The total score for the test was 100 points, with each skill assessed using a four-point scale for each indicator. The scoring was distributed as follows: story idea carried 20 points, temporal and spatial setting was allocated 16 points, character development was worth 16 points, story plot accounted for 20 points, and writing style received the highest weight with 28 points.

3.4. Equivalence of Study Groups

To ensure the initial equivalence of the experimental and control groups, a t-test for independent samples was conducted on their pre-test scores across individual and overall story-writing skills. Table 2 presents the results.

Table 2. T-Test Results for Equivalence of Study Groups on Pre-Test Scores

Dependent Variable	Group	Mean	Standard Deviation	T-Value	Degrees of Freedom (df)	Statistical Significance (p-value)
Story Idea	Control	11.19	2.38	-1.230	54	0.230
	Experimental	12.52	2.08			
Story Environment (Temporal & Spatial)	Control	8.04	2.59	-1.252	54	0.216
	Experimental	8.9	2.54			
Story Characters	Control	9.07	1.63	-1.413	54	0.163
	Experimental	9.93	2.72			
Story Plot	Control	11.07	2.55	-1.332	54	0.189
	Experimental	12.03	2.82			
Story Style	Control	15.67	3.41	-0.022	54	0.982
	Experimental	15.69	4.15			
Total Score (Story-Writing Skills Test)	Control	55.04	7.53	-1.842	54	0.071
	Experimental	59.07	8.75			

As shown in Table 2, p values for all comparisons exceeded 0.05, confirming that the two groups were statistically equivalent before the experimental intervention was implemented.

3.5. Study Procedures

To achieve the research objectives, the study followed these essential procedures:

1. A comprehensive review of relevant literature on story-writing and animation was conducted.

2. Key story-writing skills for fourth-grade students were identified and used to design a valid and reliable assessment tool.

3. Relevant content from the fourth-grade Arabic language curriculum was analyzed to guide the development of animated instructional materials.

4. Animated stories were created using Canva software.

5. A random sample was selected, and a pre-test was administered to both the experimental and control groups.

6. The intervention was implemented over eight weeks, followed by the administration of a post-test.

7. Data were analyzed using statistical methods, and the findings were interpreted in relation to the research objectives.

3.5. Study variables

The study includes the following variables:

Independent variable: The teaching method, which has two levels :(animated method and traditional method).

Dependent variable: The performance of fourth-grade female students on the story- writing skills test.

3.6. Statistical Analysis

Various statistical techniques were utilized to address the research question. Descriptive statistics, including arithmetic means and standard deviations, were calculated to provide a summary of student performance. A one-way Univariate Analysis of Covariance (ANCOVA) was conducted to examine differences between the experimental and control groups in overall skill scores while accounting for covariates. Additionally, a one-way Multivariate Analysis of Covariance (MANCOVA) was used to assess differences between the groups in specific story-writing skills, also controlling for covariates. Further inferential statistical analyses were carried out to evaluate the effectiveness of animation in enhancing students' story-writing skills.

4. Study Results

This study aimed to examine the effectiveness of employing animation in enhancing the story-writing skills of fourth-grade female students in Jordan. The following section presents the key findings based on the research question:

RQ. Are there statistically significant differences at the ($\alpha = 0.05$) level between the mean performance scores of fourth-grade female students in overall and individual story-writing skills based on the teaching method (animation vs. traditional method)?

To answer this question, means and standard deviations of the pre-test and post-test scores were calculated based on the teaching method (animation vs. traditional method). The results are presented in Table 3.

Table 3. Means and Standard Deviations of Story-Writing Test Performance by Teaching Method

Group	Pre-Test		Post-Test	
	Means	SD	Means	SD
Control	55.04	7.53	64.15	6.21
Experimental	59.07	8.75	83.76	4.29

* The maximum score for the story-writing test is 100.

The results in Table 3 indicate a notable difference between the experimental and control groups in the post-test performance. To determine whether this difference is statistically significant, a one-way analysis of covariance (ANCOVA) was conducted to control for the pre-test differences and assess the effect of the teaching method. The results of this analysis are presented in Table 4.

Table 4. One-Way ANCOVA Results for Story-Writing Test Performance

Source of Variance	Sum Squares	df	Mean Square	F-Value	Sig. (p)	Eta Squared (Effect Size)
Pre-Test Performance	7.104	1	7.104	0.249	0.620	0.005
Teaching Method	4967.588	1	4967.588	173.943	0.000	0.766
Error	1513.614	53	28.559			
Total	6897.839	55				

The ANCOVA results indicate a statistically significant difference in story-writing test between the experimental and control groups. The eta squared value (0.766) suggests that the teaching method (animation vs. traditional method) accounted for 76.6% of the variance in the post-test scores.

To further validate these findings, adjusted means, standard deviations, and standard errors were calculated for both groups, as shown in Table 5.

Table 5. Adjusted and Unadjusted Means, Standard Deviations, and Standard Errors for Story-Writing Test

Group	Before Adjustment		After Adjustment	
	Means	SD	Means	SE
Control	64.15	6.21	64.24	1.04
Experimental	83.76	4.29	83.67	1.00

The adjusted post-test mean scores further confirm that students in the experimental group (83.67) significantly outperformed those in the control group (64.24). The analysis of individual story-writing components is presented in Table 6, which examines students' performance on different aspects of story-writing before and after intervention.

Table 6. Means and Standard Deviations for Story-Writing Skills Test (Individually)

Story-writing Skills	Max Score	Group	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD
Story Idea	20	Control	11.19	2.38	13.15	1.63
		Experimental	12.52	2.08	16.66	1.75
		Total	11.88	2.31	14.96	2.44
Story Environment (Temporal & Spatial)	16	Control	8.04	2.59	10.33	1.59
		Experimental	8.90	2.54	13.76	1.50
		Total	8.48	2.57	12.11	2.30
Story Characters	16	Control	9.07	1.63	10.37	2.15
		Experimental	9.93	2.72	13.52	1.50
		Total	9.52	2.28	12.00	2.41
Story Plot	20	Control	11.07	2.55	12.52	3.03
		Experimental	12.03	2.82	16.86	2.53
		Total	11.57	2.71	14.78	3.52
Story Style	28	Control	15.67	3.41	17.78	2.90
		Experimental	15.69	4.15	22.97	2.71
		Total	15.69	3.78	20.46	3.81

The results in Table 6 indicate clear differences in students' performance across all individual story-writing skills, favoring the experimental group. To further examine the statistical significance of the observed differences in students' individual story-writing skills, while controlling for the effect of pre-test performance, a multivariate analysis of covariance (MANCOVA) was conducted. The results of this analysis are presented in Table 7.

Table 7. MANCOVA Results for the Effect of Teaching Method on Story-Writing Skills Test

Source of Variance	Story-writing Skill	The value of Hotelling's Trace test and its significance	Sum of Squares	DF	Mean Square	F Value	Statistical Significance (p)	Eta Squared (Effect Size)
Pretest - Idea of the Story	Idea of the Story	F=0.268 SIG=0.928	.567	1	.567	.220	.641	.004
Pretest - Story Environment	Story Environment	F= 0.486 SIG=0.785	1.956	1	1.956	.877	.354	.018

Pretest - Story Character s	Story Characters	F= 3.560 SIG=0.009	2.440	1	2.440	.695	.409	.014
Pretest - Plot	Plot	F= 1.534 SIG=0.198	.173	1	.173	.023	.879	.000
Pretest - Story Style	Story Style	F= 1.285 SIG=0.287	1.608	1	1.608	.207	.651	.004
Teaching Method	Idea of the Story	F= 49.243 SIG=0.000	181.45 9	1	181.4 59	70.25 0	.000	.589
	Story Environment		123.16 3	1	123.1 63	55.23 0	.000	.530
	Story Characters		108.22 8	1	108.2 28	30.82 6	.000	.386
	Plot		281.30 4	1	281.3 04	37.89 1	.000	.436
	Story Style		303.00 1	1	303.0 01	39.06 1	.000	.444
Error	Idea of the Story		126.56 9	49	2.583			
	Story Environment		109.27 0	49	2.230			
	Story Characters		172.03 8	49	3.511			
	Plot		363.78 2	49	7.424			
	Story Style		380.10 2	49	7.757			
Total Rate	Idea of the Story		327.92 9	55				
	Story Environment		293.35 7	55				
	Story Characters		322.00 0	55				
	Plot		681.98 2	55				
	Story Style		801.92 9	55				

The results presented in Table 7 indicate that there are statistically significant differences between the means of the experimental and control groups in the individual story-writing skills test, favoring the experimental group.

The Eta squared values (0.589, 0.530, 0.386, 0.436, and 0.444) reveal the proportion of variance explained by the teaching method across different aspects of story-writing. Specifically, the teaching method accounts for 58.9% of the variance in story idea development, 53% in story environment (temporal and spatial), 38.6% in character development, 43.6% in plot construction, and 44.4% in story style.

Moreover, the effect sizes observed in the study indicate that the impact of animation on story-writing skills is substantial. According to Al-Kilani and Al-Sharifeen (2016), an effect size exceeding 16% is considered high.

5. Discussion

The findings of this study indicate statistically significant differences in the performance of fourth-grade students on the story-writing skills test, both collectively and individually, in favor of the experimental group that was taught using animation. These results align with previous studies that have explored the impact of animated content on student learning and writing skills.

One possible explanation for this result is the unique ability of animation to stimulate students' imagination and creative abilities. Watching animated content exposes students to rich narratives, diverse characters, and dynamic events, providing inspiration and cognitive models for constructing their own stories. Continuous exposure to well-structured narratives helps students internalize fundamental story-writing principles, such as plot development, character interactions, and narrative coherence, which ultimately enhances their ability to plan and organize their own stories effectively (Al-Zaq, 2014).

Furthermore, animated visuals serve as an implicit instructional tool for improving dialogue writing. By observing character conversations in animations, students learn to craft natural, expressive dialogues that reflect personality traits and contextual nuances. This exposure enables them to incorporate engaging and dynamic dialogue, enhancing both the depth and realism of their narratives. Well-crafted dialogues enrich the storyline, improve flow, and engage readers more effectively (Mazhoud, 2021).

Another significant factor contributing to the improvement of students' writing skills is the role of animation in structuring plots and sequencing events logically. Watching animations allows students to observe how conflicts are introduced, developed, and resolved, helping them build coherent and compelling storylines. By analyzing how animated characters face challenges and navigate plot twists, students develop a deeper understanding of narrative progression, which is crucial for constructing well-organized and engaging stories (Mazhoud, 2021).

Additionally, the descriptive richness of animation plays a pivotal role in enhancing students' scene-setting abilities. Animated content visually illustrates environments, settings, and atmospheres, providing students with clear mental models for describing places and events with accuracy and vividness. This exposure supports the development of descriptive writing skills, allowing students to create immersive, realistic, and visually engaging narratives by learning how to depict scenes in a detailed and expressive manner, students enhance the sensory depth of their stories, making them more compelling and believable to readers (Ashour, 2014).

Beyond technical skill development, animation also fosters a positive and motivating learning environment. The interactive and entertaining nature of animated storytelling transforms writing into an engaging and enjoyable activity, reducing anxiety and increasing students' willingness to

participate. This sense of enjoyment plays a crucial role in building confidence in writing abilities, encouraging students to express their ideas more freely and engage in the creative writing process with enthusiasm. When students find storytelling fun, they are more likely to persist in refining their writing skills and develop a passion for creative expression.

6. Conclusion

In summary, the observed differences between the experimental and control groups suggest that the impact of animation technique on story-writing skills is both meaningful and substantial. The findings confirm that animation serves not merely as a visual enhancement, but as a powerful educational tool that fosters creative and critical thinking, enriches students' vocabulary and linguistic structures, and supports the development of integrated and engaging narratives.

The implications of this study highlight the importance of integrating technology, such as animation, into writing instruction. By leveraging animated storytelling, educators can effectively enhance students' story-writing abilities, making writing more accessible, enjoyable, and pedagogically effective. Given the demonstrated benefits of animation in improving both the quality and creativity of students' writing, educational institutions should consider incorporating animation-based strategies into curriculum design to enrich language learning experiences for young learners.

Given these results, animation can be seen as a transformative educational tool that not only improves technical writing skills but also fosters creativity, imagination, and engagement among students. This highlights the importance of incorporating innovative teaching strategies to support language development and enhance students' ability to construct meaningful and compelling stories.

7. Recommendations and Suggestions

Based on the findings of this study, the researchers recommend the integration of animation into teaching strategies to support the development of students' story-writing skills by incorporating animation-based learning methods that foster narrative structure, creativity, and engagement in the writing process. They also emphasize the importance of professional development for Arabic language teachers by proposing specialized training programs focused on the pedagogical use of animation in writing instruction as well as workshops on the design and implementation of animated content targeting key components of story-writing such as plot development, character creation, dialogue construction, and scene description while ensuring that educators possess both the technical and instructional skills necessary for effectively using animation as a tool to enhance linguistic and creative abilities. Furthermore, the researchers suggest future research directions including the conduction of empirical studies to assess the broader impact of animation on language acquisition and literacy development, the examination of long-term effects of animation-based instruction on writing fluency, critical thinking, and creativity, and the evaluation of various animated storytelling approaches in improving learning outcomes such as reading comprehension, listening skills, and vocabulary enrichment.

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