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languages and translation.



***“Using Digital Storytelling To Enhance Students’ Narrative  
Writing Performance”  
- The Case Of Second Year LMD Students At Hassiba  
Benbouali University Of Chlef.”***

A thesis submitted to the Department of English Language in partial fulfillment  
of the requirements for the degree of Doctor of Philosophy in Literature and  
Civilization.

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# Declaration of Originality

I, the undersigned, hereby declare that the doctoral thesis entitled "*Using Digital Storytelling To Enhance Students' Narrative Writing Performance*" - *The Case Of Second Year LMD Students At Hassiba Benbouali University Of Chlef.*" and supervised by Pr. Leila BOUSSENA, is the product of my own research and composition, and that this latter abides by the fundamental rules and standards of responsible referencing.

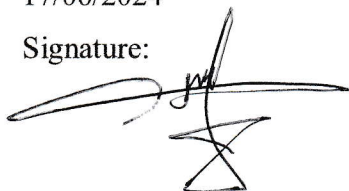
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# Dedications

*"After Allah, family support is like an anchor that keeps us steady as we ambitiously sail towards our dreams. In their embrace, we ignite the courage to reach the light, the resilience to face obstacles, and the ecstasy of shared triumphs." \_A.B.*

I dedicate this work to my strongest pillars of support,

To my beloved parents, whose unconditional love, sacrifices, and endless encouragement have illuminated every step of my academic journey, your unwavering belief in my abilities has been the foundation of my success. This thesis stands as a witness of your everlasting guidance and immeasurable love. May Allah bless you.

To my treasured grandparents, whose strength and sage advice shaped me into the person I am today.

To my cherished husband, whose help, support, love and patience have pushed me to overcome the challenges. Thank you, and this accomplishment is as much yours as it is mine.

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To the cherished ones, With  
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# Abstract

This study examines the influence of Digital Storytelling (DST) on the writing performance of second-year undergraduate students of English at Hassiba Ben Bouali University in Algeria. The study adopted a Solomon four-group design, with 100 students equally distributed among four groups. Additionally, 44 teachers voluntarily completed an attitude survey on DST's implementation. The study intended to assess the impact of DST on students' narrative writing performance, explore its capacity to cultivate an effective learning atmosphere and investigate attitudes on its incorporation in Algerian higher education. Statistical tests such as analysis of variance ANOVA, analysis of covariance ANCOVA, and an independent sample t-test were conducted to investigate the effects of the pre-test and treatment. The results demonstrated that the experimental groups outperformed the control groups in narrative writing, significantly improving organization, language use, conventions, and creativity. Observational data validated the efficacy of DST as a meaningful teaching tool, while also highlighting areas of improvement. Both teachers and students held positive attitudes toward the implementation of DST in writing classrooms. This study provides valuable information for educators and policymakers who are contemplating the incorporation of digital technologies into teaching languages for an effective and meaningful learning environment.

**Keywords:** Algerian Higher Education, Digital Storytelling, English Language Teaching, Narrative Writing performance, Solomon Four-Group Design, Technology Integration, Writing Instruction.

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# List of Abbreviations

<b>LMD:</b>	Licence-Master-Doctorat
<b>DST:</b>	Digital Storytelling
<b>NWP:</b>	Narrative Writing Performance
<b>SCOC</b>	Structured Classroom Observation Checklist
<b>TIM</b>	Technology Integration Matrix
<b>ELEOT</b>	Effective Learning Environments Observation Tool
<b>ANOVA</b>	Analysis of Variance
<b>ANCOVA</b>	Analysis of Covariance
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>EG1</b>	Experimental Group1
<b>CG1</b>	Control Group1
<b>EG2</b>	Experimental Group2
<b>CG2</b>	Control Group2
<b>EFL</b>	English as a foreign language
<b>ICT</b>	Information and Communication Technologies



# **General Introduction**

# General Introduction

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## Introduction

This chapter includes first, the background, the significance, the statement of the problem and the purpose of the current study, besides introducing the research's questions and hypotheses, concluding with an outline of the chapters of the thesis.

## Background of The Study

Writing proficiency is a fundamental skill that contributes to effective communication and promotes academic and professional success across diverse fields. The ability to convey ideas and emotions and share experiences through written words has become increasingly essential in an era of globalization and rapid technological innovation. Therefore, the teaching of writing deserves the utmost importance within educational contexts.

In the contemporary era, narrative writing appeared as one of the popular forms, which can be used in various ways to convey personal stories, cultural identities, and distinct viewpoints. Furthermore, mastering the craft of narrative writing encourages individuals to think critically, be creative, and able to create compelling and coherent stories, which are among the skills highly valued in professional and academic settings. Since industries started to place more importance on multimodal, digital literacy and communication skills, being skilled in writing goes beyond just a basic academic competence and becomes a crucial aspect of being prepared for a 21st century career with the rise of social media and communication and information technologies (ICT) that generated a new workforce requiring good presentation skills, clear articulation and communication of ideas, and experiences besides the mastery of digital tools and devices.

The evolution of digital technologies has revolutionized the writing field, necessitating a reassessment of the teaching methods to adapt to the ever-changing forms of communication and to be able to meet the needs of today's learners, often referred to as "digital natives" who are fully engaged in a society where technology

is present in every area of their lives (Prensky, 2001). These learners have distinct learning preferences and expectations, requiring instructional methods that effectively incorporate technology and are compatible with their digital lifestyles.

## **1.2 Statement of The Problem**

In the Algerian Context, building upon classroom observations and collaborations with colleagues over the humble years of teaching experience in both Secondary schools and University, it can be assumed that many teachers of writing encountered, still adopt traditional classroom approaches to teach narrative writing that tend to be more teacher-centred, deprioritizing students' personal voices and creativity. Though using data show materials for instructions and presentations as a mean of integrating technology in the classroom, It can be assumed that some teachers still avoid using technology for various contextual and personal reasons.

Over the past three years of teaching writing at university, it has been found that many Algerian EFL learners, who may be described as "digital natives," perceive the writing sessions as uninteresting. However, the absence of enthusiasm in these writing sessions is a collective responsibility. Many undergraduate students struggle to compose cohesive paragraphs and craft narrative, descriptive stories that demonstrate a well-organized plotline, frequently accompanied by numerous grammar errors and inadequate vocabulary usage.

On the Other hand, the need for the English language acquisition and the mastery of strong writing and practical multimodal literacy skills has become more critical as the country aims to improve its global competitiveness and academic standards. To meet the demand, Digital Storytelling, a promising technology tool which is currently receiving significant attention in the Western education sector and various other sectors due to its several documented benefits particularly in the area of writing instruction. Digital storytelling is a tool that combines traditional storytelling techniques with digital media resources such as images, audio, and video (Robin, 2008). It enriches narratives and encourages creativity leading to an increased enthusiasm and an enjoyable digital learning experience.

Although the significance of writing skills is well acknowledged, conventional methods of teaching writing, especially narrative writing, frequently fail to engage students or promote meaningful learning experiences. Traditional approaches may hinder the development of learners' narrative writing performance in multiple ways. Therefore, there is a need for empirical data about the efficacy of Digital Storytelling as a teaching tool in Algerian EFL classrooms. Although there are limited studies on writing instruction or Digital Storytelling in isolation, there is a lack of research that systematically explores the effects of Digital Storytelling on narrative writing skills among EFL learners, particularly within the Algerian educational context.

### **1.3 Objective of The Study**

The main objective of this study is to explore the effectiveness of Digital Storytelling in enhancing students' narrative writing performance. Additionally, it seeks to examine the impact of Digital Storytelling on classroom atmosphere and the attitudes and perceptions of both students and teachers towards the integration of DS into the curriculum. To achieve this aim, the current study sets the following research questions and attempts to answer them.

### **1.4 Research Questions**

This study seeks to investigate the following research questions:

- Does the implementation of DST enhance students' narrative writing performance compared to traditional writing classrooms?
  - Sub-question: Does the administration of a pre-test influence the post-test scores for the pretested groups?
- “Does the integration of Digital Storytelling in writing classrooms create a meaningful learning environment?”
- What are students' attitudes towards the integration of DST in writing classrooms?
- What are teachers' perceptions of integrating DST in writing classrooms at the Algerian higher education level?

## **Hypotheses**

Based on the above research questions, the following hypotheses are formulated:

1. The implementation of Digital Storytelling significantly enhances students' narrative writing performance compared to traditional narrative writing sessions.
  - Sub-hypothesis: The administration of a pre-test doesn't influence the post-test scores of the pre-tested groups.
2. Digital Storytelling sessions create a meaningful learning environment in the writing classrooms.
3. Students exhibit positive attitudes toward the integration of Digital Storytelling in narrative writing sessions.
4. Teachers expressed favorable perceptions toward the integration of Digital Storytelling in EFL writing classrooms.

## **Significance Of The Study**

This study provides significant empirical evidence to guide curriculum development and educational policies regarding integrating Digital Storytelling and technology-enhanced writing instruction in Algerian Higher education. It offers practical insights into innovative teaching strategies that prioritize student-centered approaches and use technology to enhance the quality and effectiveness of EFL writing instruction in Algerian Universities. In summary, this study's significance stems from the fact that it attempts to transform how writing is taught in Algeria and, more importantly, provide learners with the crucial skills needed to thrive in the current digital age.

## **Thesis Structure**

This thesis adheres to a structured format in accordance with the requirements established by the American Psychological Association (APA). However, Instead of Six Chapters, this thesis consists of four primary chapters besides the general Introduction and conclusion, each fulfilling a particular function in clarifying the research topic and addressing

The research questions.

The general introduction, which provides the background of the research topic, highlights the study's significance, research questions and hypotheses, and defines the objectives of the study, and outlines the thesis framework.

The first chapter is a Literature Review chapter that thoroughly examines relevant literature, encompassing theoretical frameworks, empirical studies, and conceptual discussions and evaluations related to teaching narrativewriting, besides exploring digital storytelling's promising potential as a pedagogical tool in Algeria and beyond.

Under the title "Methodology," chapter two comprehensively explains the research design, participants, instruments, methods, procedures and data analysis techniques used in the study. This chapter explains the methodological approach adopted to investigate how digital storytelling improves the narrative writing performance of Algerian EFL learner

Chapter three presents the results of the empirical investigation, encompassing analyses of both quantitative and qualitative data gathered throughout the research process. This chapter comprehensively analyses how digital storytelling affects the learners' performance of narrative writing.

The fourth and final chapter of the thesis is the conclusion and discussion which discusses key findings and link them to the literature besides providing theoretical implications, pedagogical implications and policy and practice implications. The general conclusion, adresses implications, combines the results of the study. In addition, this chapter also reveals the limitations this study encountered to provide context for recommendations for future research. It concludes by presenting this study's conclusions regarding the initially stated research questions and hypotheses.

Overall, the thesis's systematic organization promotes coherence, clarity, and logical progression, hence improving the reading and accessibility of the study findings.

# **Chapter One**

## **Literature Review**

# Chapter 1:Literature Review

---

## Introduction

Changes in pedagogy and technological breakthroughs are driving constant change in the educational context. Among these changes, a noteworthy invention is the inclusion of digital storytelling (DST) in narrative writing instruction, especially for higher education settings. With an emphasis on the function of DST as a transformational instrument, this literature review chapter covers the theoretical foundations of the study and the historical background of Writing instruction and its evolution in the digital age besides examining the status of multimodal and narrative writing through digital storytelling instruction in Algerian Higher education as well as reviewing pedagogical approaches to teaching it. This chapter also aims to provide an overview of how DST (Digital Storytelling) could potentially revolutionize the teaching of story writing by examining the existing body of research.

Besides discovering practical strategies for creating effective learning settings using DST, and this chapter also aims at highlighting possible obstacles of incorporating DST into the writing classroom. The ultimate goal of this literature review is to demonstrate the revolutionary potential of digital storytelling in the field of writing instruction, while also providing practical recommendations and implications for future research.

The chapter expects that this investigation will add to the current discourse on innovative instruction and improving narrative writing instruction to meet the needs and learning preferences of the "digital natives". (Prensky , 2001)

## Theoretical Foundations

### Constructivist Learning Theory

Constructivism, a psychological theory profoundly integrated into educational methods, provides an in depth structure for comprehending how learners actively create information. Constructivism, which is based on the ideas of Dewey (1910), Bruner (1961), Vygotsky (1962), and Piaget (1954), suggests that learning is an active process. According to this theory, learners construct new information by building up on their

previous experiences and understanding (Olusegun, 2015). This technique differs from conventional behaviorist methodologies, which prioritize the passive acquisition of information.

Within the realm of language acquisition, constructivism highlights the importance of students assuming an active role in their educational process. Instead of simply remembering grammar rules or vocabulary, learners actively interact with the language, combining new linguistic and cultural knowledge with their existing understanding. Active participation is essential for cultivating the communicative ability required in a globalized society, where language functions as a means of establishing connections and comprehending varied viewpoints.

With the ever changing educational environment, there is an increasing demand for innovative approaches that are in line with constructivist ideas. These methods promote the use of technology to support students' active construction of knowledge. Teachers have a crucial part in this process, since they are required to go beyond conventional instructional methods and embrace strategies that encourage active learning and critical thinking. The teacher's job undergoes a transformation from being a mere transmitter of information to becoming a facilitator of learning, assisting students in their exploration, reflection, and application of new ideas.

Furthermore, the incorporation of technology into language learning settings is crucial for integrating constructivist theory with the requirements of the 21st century. Through the use of digital resources, students can actively participate in genuine communicative practices that improve their language learning experiences. This method not only enhances the acquisition of linguistic abilities but also equips students for the dynamic and interconnected environment they will inhabit and engage with professionally.

According to Piaget (1967, p. 15), students acquire knowledge most effectively when they actively engage in the learning process, using their own experiences to construct meaningful texts. (Piaget, 1967, p. 27) When it comes to teaching writing, digital storytelling is compatible with constructivist concepts. Through the involvement of students in the creation of digital stories, they are able to use their existing knowledge and personal experiences, which enhances their cognitive engagement and nurtures their writing abilities.

The idea of Digital storytelling being in line with constructivist principles, that emphasize learners actively constructing meaning (Jonassen et al., 1999). Students acquire knowledge by active participation in storytelling processes, which include planning, research, writing, utilizing technology, and making design decisions, rather than simply absorbing instruction passively. Multimedia production facilitates both artistic expression and the ability to possess and control one's creative work. These principles are related to fundamental ideas of learner-centered creation (Papert & Harel, 1991) and experiential learning in a real-world environment (Dewey, 1938). Through the lens of digital storytelling, EFL writing growth is facilitated by constructivist scaffolding, which include students creating multimedia narratives in a student-driven manner.

### **2.1.2 Social-Constructivist Learning Theory**

Vygotsky's social constructivist learning theory emphasizes the significance of social interaction and cultural instruments in the process of learning, while also building upon constructivist principles. Vygotsky (1978, p. 86) believes that learning takes place through collaborative tasks, wherein knowledge is collectively created within a social framework. Vygotsky also expanded upon Piaget's notion that learners do not merely respond to external stimuli, but rather interpret these stimuli through their cognitive frameworks. Nevertheless, Vygotsky criticized Piaget and other cognitivists for disregarding the inherent social dimension of language and learning. He argued that learning is intrinsically a collaborative process, wherein social contact plays an essential role in the development of cognitive skills.

Vygotsky proposed the notion of two separate stages of development to exemplify the cooperative aspect of learning. The first factor is the level of actual development, which refers to the current stage of cognitive development that a learner has achieved. At this stage, learners possess the ability to autonomously resolve issues, employing the knowledge and skills they have completely mastered. (1978, P. 85)

On the other hand, the level of potential development, also known as the "zone of proximal development" (ZPD) (P.85., *ibid*), indicates the stage at which a learner can perform with appropriate instruction or when working together with more knowledgeable peers. At this stage, learners possess the ability to handle complex problems and understand content that would be too difficult for them if they only depended on their

current degree of cognitive development. The ZPD, or Zone of Proximal Development, is the optimal environment for genuine learning to take place. It is a zone where cognitive structures are still in the process of developing, but can only do so effectively through social contact and collaborative efforts.

Vygotsky's focus on the Zone of Proximal Development (ZPD) highlights the significance of the teacher's role, not just as a conveyor of information, but as a facilitator who assists in bridging the divide between what learners can do on their own and what they can attain with assistance. Furthermore, it emphasizes the significance of peer collaboration in the process of learning, since engaging with others can result in a more profound comprehension and enhanced cognitive growth.

These insights about learning have major implications for educational methods. The statement proposes that educational settings should be intentionally created to promote social engagement and cooperation, offering learners the chance to participate in activities that are slightly more challenging than their current skill level, while still within their Zone of Proximal Development (ZPD). By implementing this approach, instructors can cultivate a more interactive and encouraging learning environment that facilitates ongoing cognitive development.

Technology has revolutionized communication, allowing us to exchange information and collaborate in new and innovative ways. By combining constructivist and sociocultural perspectives with technology, we have seen significant changes in teaching methods and learning environments. Socially oriented technologies have significantly influenced the roles of teachers and learners by fostering a more equitable learning environment where instructors and students work together to construct knowledge. This has led to a reconfiguration of the traditional relationship between learners and instructors.

Moreover, digital storytelling takes place inside a social context, where it involves significant interactions among peers. The concept of collaborative learning in Vygotskian theory has a significant impact on language development, particularly in the context of shared storytelling processes (Smeda et al., 2014). Students acquire essential writing, listening, and speaking skills through collaborative planning, providing feedback, evaluating drafts, and assisting with technology use. These genuine interactions provide support for learning within the range of abilities that students are capable of with

assistance (Vygotsky, 1978). Sharing stories publicly also serves as a motivation for creating high-quality tales that satisfy an audience. Therefore, digital storytelling can be presented as a means of enhancing English as a Foreign Language (EFL) writing in environments that promote social support.

### **2.1.3 Multimodality and Multimodal Literacy**

In the past, literacy has been narrowly characterized as the ability to comprehend and produce written communication using alphabetic characters. Nevertheless, within the framework of modern society, marked by a growing use of digital and multimodal communication, this description is no longer satisfactory. Currently, the texts that students interact with, such as YouTube videos, social media posts, and online articles, are not just written content but frequently incorporate several forms of communication, such as videos, photos, and audio. It is essential to acknowledge this change, as contemporary communication goes beyond the limits of writing and speaking. Likewise, literacy includes much more than just language skills. In order to effectively pass through the intricate textual environment of today, students must cultivate aptitudes that extend beyond the mere act of reading and writing conventional text. Writing and speech are only two of the various techniques used in modern communication.

#### **2.1.3.1 Understanding Modes of Communication**

According to the Oxford University Press (2023) A mode refers to a particular way of conveying information, where each mode has its own specific aims and operates in diverse manners. In order for pupils to comprehensively comprehend the messages delivered in diverse texts, it is essential that they possess a thorough understanding of the distinct modalities used for communication. Researchers have categorized communication into five main modes: verbal, visual, auditory, gestural, and spatial.

The linguistic mode refers to the use of language, either in written or spoken form, for the purpose of communicating meaning. The components included are lexical choice, syntactic and paragraph structure, lexicon, and syntax (Kress & van Leeuwen, 2006).

The visual mode pertains to elements that are perceptible by sight, such as pictures, signals, symbols, and movies. It also includes aspects of visual design, such as color, layout, and typography (Jewitt, 2009).

The aural mode emphasizes the auditory aspects of a text, including speech,

background sounds, music, and even silence, all of which add to the overall significance of the text (Jewitt, 2009).

The gestural mode refers to communication that occurs through physical movements, including facial expressions, body language, hand gestures, and interactions between individuals (Kress & van Leeuwen, 2006).

The spatial mode refers to the way in which the physical arrangement and organization of elements in a text convey meaning. This includes the placement and spacing of pieces, as well as the proximity of individuals or things (Kress & van Leeuwen, 2006).

### **2.1.3.2 Multimodal texts**

A text that combines multiple forms of communication is known as a multimodal text. These texts can exist in either physical or electronic form. Illustrations of paper-based multimodal texts consist of picture books, graphic novels, and comics, whilst digital multimodal texts may comprise videos, vlogs, and webpages. Every mode present in a multimodal text makes a distinct contribution to the overall meaning, resulting in a more complex and deeper communication experience. For example, in a video, the integration of spoken words (linguistic mode), pictures (visual mode), and music (aural mode) can effectively communicate a message with greater impact than any one mode could do independently.

In second language (L2) contexts, students are using technological tools to create multimodal texts that incorporate several forms of media, including text, images, audio, and video. These texts are created in digital formats such as blogs, digital stories, and mini-documentaries (Hafner & Miller, 2011; Yi & Angay-Crowder, 2016). This current situation corresponds to the redefinition of literacy and the emerging concept of "multiliteracies," which pertains to the skill of effectively interacting with texts that incorporate various semiotic resources (Camiciottoli & Campoy-Cubillo, 2018; New London Group, 1996). The term "multiliteracies" is frequently used synonymously with "multimodality" (Yi & Angay-Crowder, 2016).

In this context, Digital storytelling enhances several literacies beyond the scope of writing alone due to its multimodal nature. Research indicates that the creative process enhances various skills such as analytical thinking, technological proficiency, presenting abilities, research capabilities, visual design aptitude, and critical thinking skills. This is supported by studies conducted by Hung et al. (2012), Sarica and Usluel (2016), and

Vinogradova et al. (2011). These multiple literacies are crucial for achieving success in the 21st century.

Building upon the theoretical basis of multimodal literacy, it is clear that communication in modern society is no longer limited to single modes, such as written or spoken language. Currently, the process of creating meaning requires utilizing several forms of communication, such as text, images, sound, and gestures, especially in digital environments. The increase in literacy is a result of larger historical shifts in human communication, tracing back to the earliest methods of writing.

## **2.2 Historical Background**

The development of modern writing started to form in the late 1970s, coinciding with the rise of the Writing Across the Curriculum (WAC) (Russell, 1997). Emig (1977:123) was the first to define writing as the act of producing and composing a distinct verbal structure that is visually documented.

Writing proficiency is a major issue for Algerian EFL students, despite its acknowledged significance. Hedge (2000:124) accurately characterizes the complex and diverse nature of writing: "The process encompasses various tasks, including establishing objectives, brainstorming, structuring data, choosing suitable language, creating a preliminary version, scrutinizing and evaluating it, and finally, refining and correcting."

The intricate nature of this process necessitates an organized and meticulous approach, especially for writers who are learning a second language. Davis & Widdowson (1974) condense this process into three essential elements: communication, structure, and manipulation. On the other hand, Broughton (1980:16) presents a thought-provoking viewpoint on writing as a dualistic activity, encompassing both personal and societal dimensions stating that unlike speaking, writing is an activity that usually takes place simultaneously in both public and private contexts. Writing is considered public since it is intended for readers, but it is also private because the process of writing is inherently personal.

## **2.3 The Nature of Writing**

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for Algerian EFL students, despite its acknowledged significance. Hedge (2000) accurately characterizes the complex and diverse nature of writing: "The process encompasses various tasks, including establishing objectives, brainstorming, structuring data, choosing suitable language, creating a preliminary version, scrutinizing and evaluating it, and finally, refining and correcting." (P.124)

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Writing is one of the complex skills to master. (Hedge,2005) since it necessitates many other subskills, including idea formulation, knowledge representation proficiency, and subject-matter experience (Horvath, 2001; Nunan, 1999). The idea of "writing to learn" (Zamel,1992) and constructivist learning theories are in line with this point of view (Emig, 1977). It implies that writing itself, rather than only conveying previously held beliefs, can enhance comprehension and promote the formation of new knowledge.

Writing can be defined as the act of expressing thoughts, ideas, or information via the use of written words. Emig's (1977) description of writing as the act of producing and forming a distinct verbal creation that is visually documented is a fundamental idea in comprehending the essence of writing. According to Brown (2001), words, phrases, sentences, and texts are created by combining symbols in a typical manner to represent speech. Writing, in the opinion of Nunan (2003), is an intellectual endeavor that involves generating ideas and putting them into concise sentences and paragraphs.

According to White and Arndt (1991), writing is an intellectual process that requires thought processes in order to be produced in writing. This process comprises idea generation, goal setting, writing monitoring, and writing evaluation. Overall, scholars

generally believe that writing is a complex intellectual process that conveys the thoughts and emotions of the writer.

## **2.4 The Significance of Writing**

The majority of academic institutions stress the value of mastering the four language acquisition skills—writing, reading, speaking, and listening. Writing helps individuals communicate, which is important in every aspect of life. Raimes (1994) discussed the significance of writing, pointing out that it allows students to participate in the language learning process as they begin to organize and integrate previously learned vocabulary with new terms. Writing also fosters active thinking since it requires students to use their cognitive abilities to analyze and synthesize information into a well-organized written work.

The goal of writing is to communicate ideas, thoughts, and messages to the reader using precise grammar, punctuation, spelling, and vocabulary choices. Writing is always required for standard language, not just speaking. In this regard, Ur (2001) says that "Writing typically requires far higher standards of language than speech does. More meticulously constructed, more varied and accurate vocabulary, more accuracy of communication overall." (p.163)

In addition to speaking, listening, and reading, students must be able to write, put together written reports, and respond to advertisements. Many people believe that having strong writing skills translates to having strong speaking skills as well. It is common for writers to ponder for hours before finding the perfect words to put on paper. According to Kelly (1969) writing practice teaches one how to use words correctly in order to get the reader to pay attention. In order to accomplish this, the writer uses "key words" at appropriate intervals. Writing also aids in the development of critical speaking abilities. (p.145)

Furthermore, according to Cumming (1995) "Writing at that level is important primarily because it aids in students' learning." Students who write new words and structures down are better able to retain them, and since writing requires more

concentration and time than speaking does, writing helps students keep their attention on the material." (148),

As Harmer (2006) claims, writing motivates students to focus on using language appropriately. The writing process offers more time for thinking, enabling students to use resources like dictionaries and grammar books when presented with obstacles. This technique may contribute to language development (P. 31).

Key significant benefits of writing were highlighted by The University of Missouri (2010):

1. It boosts the ability to develop relevant queries.
2. It increases one's capacity to communicate complex topics to both readers and oneself.
3. It promotes feedback from others.
4. It helps refine ideas.
5. Writing ideas down aids in judging the strength of arguments.
6. It promotes crucial life skills in communication and critical thinking.
7. Writing is a vital professional skill.

In essence, writing can be considered as a fundamental necessity for scholastic achievement across all fields and in all careers. Proficient writing abilities are generally important to academic achievement, successful job applications, and career advancement. The quality of one's writing often acts as a measure of their talents. Well-crafted compositions allow individuals to articulate their thoughts, express their emotional states, and successfully transmit ideas. In larger terms, writing proficiency fulfills educational, professional, social, and communication objectives.

## **2.5 Writing types**

Writing is a broad and multidimensional skill that includes many different genres

and forms. Every kind of writing has a different function and is distinguished by certain rules and techniques. Educators and students alike must comprehend the various types of writing because it facilitates the development of flexible writing techniques and the capacity to adjust to a variety of communicative circumstances. (Hyland, 2003, Murray, 2009) The main forms of writing are examined in this part, with special attention paid to their distinctive qualities and applications in both academic and professional contexts. Effective communication and expression are shaped by a variety of writing forms, including expository, persuasive, and creative writing.

### **2.5.1 Creative Writing**

The concept of "Creativity" is universally understood as the process of thinking beyond conventional boundaries; thinking in a unique, analytical manner that breaks free from rigid and monotonous thinking patterns, and instead embraces unconventional, dynamic, boundless, surprising, and inventive thinking approaches. Creative writing is the skillful utilization of human creativity, expressed through written form. (Csikszentmihalyi, 1996) According to Chambers' dictionary, the term "creative" is defined as having the ability to create, generate, or produce something, particularly in relation to creativity and originality.(1998)

Creative writing refers to the capacity to produce unique and imaginative literary works or compositions (Ramet ,2007,P. 17). According to Gaffield-Vile (1998), this kind of writing promotes self-exploration and improves language abilities. Students who actively participate in creative writing frequently have a profound sense of possession over their work and a constant enhancement of their skills. The significant advancement can be mostly due to the level of independence that students possess in their assessments and investigations throughout creative writing exercises. Although these attributes generally foster a captivating, pleasurable, and fruitful learning atmosphere, certain learners may erroneously view creative writing as a simple alternative. They may presume that it necessitates minimal or no reading. It is imperative for instructors to highlight that creative writing necessitates a reading proficiency on par with that needed for literary analysis. Creative writing is not an exclusive talent limited to the privileged or naturally talented authors, but rather a skill that can be cultivated by students who may not possess exceptional creativity or proficiency with language. Creative writing plays a significant role in enhancing students' writing abilities and allowing them to explore

different rhetorical techniques. According to Harlen (1992, 37), creativity in practice is characterized by the combination of emotions and thinking, where creative attitudes are accompanied with cognitive talents. Cultivating a cognitive orientation marked by originality and emotional attributes motivates learners to exhibit inquisitiveness, confront difficulties, interact with intricate concepts, and unleash their creative faculties.(Craft, 2005; Robinson, 2011) Cognitive abilities enable individuals to originate, process, and manipulate ideas.

Over the past few years, creative writing has undergone substantial development, transforming into a separate academic field that encompasses its own theories, workshops, techniques, and instructional materials. These resources are designed to foster students' creativity and enhance their writing abilities. Researchers such as Joseph Moxley (1989), Windy Bishop and Hans Storm (1994), and D. G. Meyers (1996) have conducted thorough investigations and provided extensive evidence on the significance and expansion of creative writing as an academic discipline in the United States. Earnshaw (2014) has made substantial contributions to this field of research as well.

However, teaching the art of creative writing is a challenging endeavour that has undergone multiple controversies among scholars. Educators have long been perplexed about the necessary steps to foster creativity in their students' writing abilities. The challenge exists in the inherent characteristics of creative writing, which involve the integration of cognitive (thinking) and emotive (feeling) components.(Harper, 2010; Kaufman & Beghetto,2009)

### **2.5.2 Academic Writing**

Academic writing plays a vital role in the field of English for Academic Purposes. Foreign language learners sometimes find writing assignments to be especially challenging. Furthermore, students must acquire proficiency in academic English, as well as familiarize themselves with novel writing styles, referencing techniques, and document formats. Usually, students are required to fulfill a variety of writing assignments, which can range from brief essays to lengthy dissertations. Academic writing can be undertaken either during exams or as part of homework. The course accommodates the varied learning requirements of students, providing flexibility for all levels and disciplines, ranging from basic to advanced, to concentrate on the most pertinent elements of academic writing for their studies (Bailey, 2003: 4).

The primary objective of academic writing is to ensure that the work is comprehensible and accessible to readers. Godev (2000) characterizes academic writing as challenging to describe since it involves a wide range of duties seen in different academic fields. Discipline-specific regulations dictate the structure of academic assignments. (p. 636) Academic writing can be understood through four approaches: audience, task, communicative function, and style (Silva, 1991).

Academic writing must maintain objectivity by presenting information in a clear, straightforward, and ordered manner. Contemporary writing theories highlight the recursive aspect of writing, yet academic writing is typically perceived as linear. It tends to focus on one core subject each phrase, mostly influenced by English composition standards. Academic writing is characterized by its rigorous adherence to established conventions. For instance, the use of the first person is typically avoided in order to prioritize the subject matter over the author. To avoid the perception of aggression, it is advisable to refrain from making subjective judgments. The selected register is distinguished by its clarity, objectivity, brevity, coherence, comprehensiveness, diversity, coherence, and formality. (University of Western Australia, n.d.)

In the realm of written communication, instructing students in the art of academic writing is widely regarded as one of the most formidable undertakings for educators. The intricacy of this task has ignited substantial discourse among experts in search of resolutions. Carroll's (2002) and Thaiss, Cris, and Terry's (2006) research emphasizes the various requirements that educators and students must attend to in the realm of scholarly writing. In order to enhance academic writing, it is necessary to analyze the fields of educational psychology, linguistics, applied linguistics, psycholinguistics, sociolinguistics, and other relevant disciplines. Students are required to exhibit a high level of skill in both fluency and correctness, encompassing grammar, vocabulary, spelling, semantic prosody, syntactic maturity, cohesion, coherence, and discourse competence.

The following characteristics are crucial for creating academic papers of superior quality. English as a second language places great importance on academic writing, which is highly regarded and receives substantial attention and support from the academic community. By implementing realistic approaches, academic institutions can significantly

improve students' proficiency in academic writing. Theories on writing possess the capacity to enhance students' abilities by employing practical tactics. Hence, it is recommended to employ and assess efficient writing strategies in order to assist students in attaining the essential level of academic writing proficiency. This strategy seeks to actively engage, actively involve, effectively retain, and ultimately gratify students with the course.

## **2.6 Approaches to Teaching Writing**

Efficient writing instruction necessitates a comprehensive approach that appeals to various learning styles and educational objectives. Diverse instructional approaches have been created to improve students' writing abilities, with each method providing distinct techniques to promote creativity, critical thinking, and expertise.

### **2.6.1 The Product Approach**

The product approach in teaching emphasizes the end outcome of a piece of writing and evaluates it based on criteria such as vocabulary usage, grammatical accuracy, technical aspects like spelling and punctuation, as well as content and organization (Brown 1989: 320). The standard protocol involves assigning a written work, collecting it, and subsequently returning it for additional review, with mistakes either rectified or indicated for the student to address (Raimes, 1983).

### **2.6.2 The process approach**

During the mid-1970s, the process approach emerged as a replacement for the product approach in writing. The product approach involves four stages: prewriting, composing/drafting, revising, and editing (Tribble, 1996). The phases of the writing process are recursive, meaning they can occur repeatedly and in a non-linear manner. Additionally, these stages have the ability to interact with one another during the writing process. For instance, numerous authors engage in prewriting activities during the revision stage to generate a fresh concept or enhance a perspective. The process approach prioritizes rewriting and solicits criticism from peers, resulting in the creation of many drafts with extensive sentence deletions and paragraph reorganization. At the initial phases, the rectification of spelling and punctuation is not crucial.

Badge & White (2000) have criticized the process approach for its uniform view of

the writing process, disregarding the specific content and authorship, and for its inadequate consideration of the purpose and social context of the written piece. Nevertheless, the process approach is widely embraced and employed due to its ability to enable students to comprehend the sequential stages of writing, while also acknowledging that the knowledge and experiences they possess contribute to the enhancement of their writing abilities.

### **2.6.3 The Genre Approach**

During the 1980s, there was a rise in popularity of the genre approach, which emphasized the idea that students might improve their writing skills by studying many forms of written texts. Nunan (1999, 280) stated that many types of writing are characterized by a specific structure and grammatical patterns that mirror the communication intention of the genre. Cope & Kalantzis (2001) propose a three-phase genre method to writing. Firstly, the goal genre is demonstrated to the students. Secondly, a text is collaboratively created by the teacher and students. Lastly, each student autonomously constructs their own work.

Badge & White (2000) assert that the approach recognizes the social context of writing, the presence of a specific goal, and the potential for conscious learning through imitation and analysis, which enables explicit instruction. Critics argue that the genre approach is flawed as it fails to recognize the importance of the processes involved in creating a text and portrays learners as predominantly inactive. The genre approach effectively demonstrates to pupils that various discourses necessitate distinct structures. Moreover, the use of genuine texts amplifies student engagement and imbues the writing process with importance.

## **2.7 The Significance Of Teaching Narrative Writing**

The significance of narrative writing in educational environments cannot be underestimated. According to Graham and Perin (2007), it plays a crucial role in the development of essential abilities such as critical thinking, creativity, and communication. Narratives have applications outside literary classes. According to Bruner (1991), narratives play a crucial role in our understanding of the world. It is quite remarkable when you contemplate it.

Researchers have discovered that proficiency in narrative composition can serve as a reliable indicator of academic performance across several subjects. Berninger et al. (2006) found that children who demonstrate exceptional skills in narrative writing at an early age also demonstrate high levels of achievement in other academic disciplines. Writing not only enhances reading abilities but also fosters vocabulary development and overall language proficiency. ((National Writing Project & Nagin, 2006).

Corden's (2007) study provided empirical evidence supporting the notion that when educators prioritize the instruction of narrative abilities, there is a substantial enhancement in the overall writing proficiency of students. Engaging in storytelling not only has academic benefits but also has the potential to enhance one's emotional well-being. Pennebaker and Seagal (1999) discovered that engaging in expressive writing, particularly through storytelling, has the potential to enhance both physical and mental well-being. Within educational institutions, the practice of narrative writing offers students a valuable opportunity to reflect on their personal experiences and develop as individuals, so enhancing their general state of mental and emotional health and their level of self-understanding (Bolton, 2010).

## **2.8 Narrative Writing's components**

When instructing narrative writing, it is crucial to concentrate on certain essential elements that are presented as follows:

1. **Character Development:** The primary focus is on constructing characters that possess a genuine sense of realism. Nikolajeva (2014) highlights the need of instructing students in the creation of intricate characters that possess both external characteristics and inner drives. Kellogg (2008) proposes employing character mapping and perspective-taking exercises as strategies to assist students in developing realistic characters.
2. **Plot Structure:** This pertains to the organization of events in a manner that captivates readers. Todorov's (1969) five-stage model of equilibrium-disequilibrium-new equilibrium serves as an excellent foundation for instructing plot development. The research conducted by Stein and Albro in 1997 on causal event chains can assist students in developing logical and captivating storylines

3. setting: An intricately depicted environment has the ability to captivate readers and immerse them in the story. In his work, Bal (2009) emphasizes the significance of setting in establishing atmosphere and shaping the conduct of characters. Langer (1995) proposes utilizing sensory nuances and cultural context to enhance the dynamic quality of situations.

4. Point of View: Selecting the appropriate narrative point of view is essential. Genette's (1983) study on narrative discourse offers a conceptual framework for comprehending diverse perspectives. Keen's (2006) recent research demonstrates the impact of point of view on readers' emotional involvement with the story.

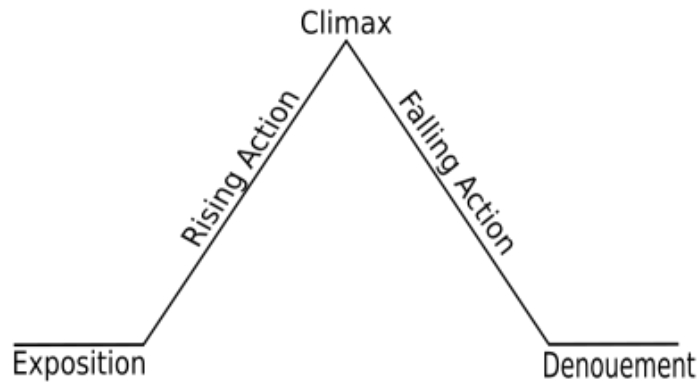
5. Theme: Enhancing the depth of a narrative by incorporating multiple layers of meaning refine student writings. Chatman's (1978) examination of story and discourse provides valuable insights into the emergence of themes through narrative elements. Instructing pupils on how to recognize and cultivate themes can significantly enhance the effectiveness of their writing (Smagorinsky, 2008).

5. Dialogue: Developing authentic discussions among characters enhances the vitality of narratives. Gardner (1991) highlights the significance of real conversations in works of fiction. Engaging in fun activities such as practicing eavesdropping and doing character interviews might be beneficial for students looking to enhance their ability to write dialogue (Romano, 1987).

### **2.8.1 Narrative Structure**

Comprehending and instructing the arrangement of a story is essential for cultivating skilled writers. The traditional narrative structure, as outlined by Freytag (1863/2012), consists of exposition, rising action, climax, falling action, and resolution. As displayed in the figure Below.

**Figure 1** *Freytag's Pyramid Of Narrative Structure*



Although this paradigm still holds influence, modern approaches to story structure frequently integrate more intricate and adaptable frameworks. Labov and Waletzky (1967) proposed a sociolinguistic model for story structure that consists of six elements: abstract, orientation, complicated action, evaluation, resolution, and coda. This paradigm has had a significant impact on both literary analysis and writing training, providing a more sophisticated comprehension of how narratives are built and operate within society.

Expanding upon these fundamental ideas, academics have devised intriguing methodologies. Considering Dymock's (2007) concept of "story grammar," for example. The main focus is to assist students in fully grasping the concept of story organization by providing explicit guidance and visual representation. This approach has significantly transformed the writing process, particularly benefiting individuals who face difficulties in writing and those who are acquiring English as a second language (Dymock & Nicholson, 2010).

Additionally, there is the story grammar model developed by Stein and Glenn in 1979. The story is split into many components such as setting, initiating incident, internal response, attempt, outcome, and reaction. This concept has gained significant popularity in both academic research and practical educational settings due to its efficacy. Research has demonstrated that it significantly enhances students' comprehension and ability to produce more compelling narratives (Westerveld et al., 2020).

Herman (2013) offers a distinct perspective on cognitive approaches to story organization. He discusses the significance of cognitive models in comprehending and crafting narratives. The premise is that by instructing students to understand and modify

narrative components within a wider cognitive structure, they will generate writing that is more refined and influential.

## **2.9 Assessment of Narrative Writing**

Evaluating narrative writing can be challenging. Ultimately, we are confronted with the realm of creativity and subjective aspects. Therefore, effective evaluation typically combines both formative and summative methodologies.

An effective instrument that has demonstrated great utility is analytic rubrics which concentrate on particular aspects of the story and are excellent for providing thorough feedback and directing instructing (Spandel, 2005). According to Andrade et al. (2009), students' involvement in the creation of rubrics leads to a better understanding of quality criteria and an improvement in their writing skills.

### **2.9.1 Portfolio Assessment:**

Portfolio assessment refers to observing the progression of a student's writing abilities over a period of time. In addition, it encourages students to reflect on their own writing methodology (Yancey, 1999). The significance lies not only in the final product, but also in the process used to get it.

A study conducted by Lam (2018) indicates that digital portfolios have the potential to significantly enhance student involvement and self-assessment in the context of narrative writing. Peer and self-assessment are techniques that encourage metacognition and assist students in internalizing standards of excellence (Andrade, 2010).

According to Topping's (2009) meta-analysis of peer assessment research, when peer assessment is implemented correctly, it can be just as trustworthy and valid as instructor assessment. Standardized writing tests, however controversial, can offer significant data for curriculum development and highlighting areas that need improvement (Jeffery, 2009). Nevertheless, Hillocks (2002) and other opponents contend that these exams could result in a restricted curriculum and a focus on test preparation.

### **2.9.2 Authentic Assessment:**

According to Wiggins (1993), it is recommended to use authentic assessment

assignments that mirror writing scenarios found in the real world. This method can be very impactful for narrative writing, as it enables students to interact with authentic audiences and objectives.

### **2.9.3 Conferencing:**

Engaging in one-on-one or small-group discussions between teachers and students can offer excellent chances for formative evaluation. Calkins (1994) highlights the significance of writing conferences in delivering focused feedback and instruction.

## **2.10 The Evolution of Writing in the Digital Age**

The evolution of writing has been strongly connected with technological advancements, and the digital era has resulted in significant shifts in our written communication methods (Ong, 2002, P132). With the growing interconnectivity and digitization of the world, there has been a significant transformation in the methods and mediums used for writing. This has had a dramatic effect on how written texts are created and consumed (Baron, 2013).

The advent of digital technology, such as computers, cellphones, and the internet, has fundamentally transformed the manner in which we generate, retain, and transmit textual material (Kress, 2003). The widespread use of digital platforms has resulted in the emergence of new forms of writing, including blogging, social media posts, and digital storytelling. These new forms have brought about fresh conventions, styles, and methods of expression (Rettberg, 2014). These advancements have posed challenges to conventional concepts of authorship, audience, and the precise definition what constitutes "writing" (Bolter, 2001). The integration of many forms of communication has fundamentally changed the way we create, consume, and engage with written content. This has resulted in the development of new skills and competencies necessary for effective digital communication (Spire et al., 2019).

### **2.10.1 The Different Modes of Writing**

In the modern era, individuals have easy access to digital resources through devices such as tablets, laptops, and smart phones. Learners frequently engage in activities such as posting on blogs and social media platforms, taking on the role of active producers

rather than passive consumers of digital content. These devices have facilitated the convenient access to videos, pictures, sounds, and other semiotic materials (Paker Beard, 2012; Palmeri, 2012). In today's technologically advanced society, the use of paper-based text has been questioned. This shift challenges the traditional belief that literacy is solely based on written communication. Instead, it acknowledges that communication involves various channels for delivering messages and meanings, making it inherently multimodal (Kress & Leeuwen, 2006).

This transition has resulted in numerous significant alterations in the writing domain, such as Multimodal composition, which refers to the use of digital platforms that allow writers to integrate several forms of media, including images, videos, audio, and interactive features, with written text (Jewitt, 2005.P.316). This multimodal method enables a more thorough and captivating form of communication. Digital writing frequently utilizes hyperlinks, enabling readers to navigate content in a non-linear, more precisely multi-linear or multi-sequential manner (Landow, 2006.P.3). This feature defies conventional ideas of story organization and promotes more adventurous reading experiences.

The transition from print-based to digital writing has fundamentally revolutionized the manner in which individuals create and utilize texts. Shipka (2011) argues that this change requires a reevaluation of traditional instructional approaches to writing, which have predominantly emphasized alphabet text. Within this ever-changing environment, Digital Storytelling (DST) emerges as a notable educational tool, providing an innovative method for creating narratives that incorporates many forms of media. The development of DST mirrors wider patterns in digital communication, which have broadened the potential for the creation and transmission of stories. DST, through the integration of visual, aural, and interactive elements, not only increases involvement but also questions conventional ideas about storytelling and structure.

## **2.11 The Emergence of Digital Storytelling**

### **2.11.1 Storytelling**

“Every person is born into life as a blank page – and leaves as a full book. Our

lives are our story, and our story is our life. Story is the narrative thread of our experience – not what literally happens, what we tell each other and what we remember.” **Christine Baldwin** in *Story Catcher* (2005, p. ix)

Throughout history, storytelling has consistently played a crucial role in fostering connections among individuals, spanning from ancient civilizations to our contemporary 21st century. Prior to the development of writing, individuals would gather around campfires and engage in the oral tradition of storytelling. "Sawyer, 1990" Storytelling has emerged as a vital and indispensable instrument for preserving cultural values and transmitting traditions and information to future generations. "Patterson, 1999".

Storytelling is a traditional technique for conveying ideas and acquiring knowledge. It has undergone changes and development over the course of history. The initial narratives were conveyed through pictorial representations on walls. (Frazel, 2011; P,1) Subsequently, narratives were transmitted verbally from one generation to the next. Currently, narratives are conveyed through electronic means. Frazel asserts that storytelling is an inherent aspect of civilization and culture. The story is centered around language and conveyed with the contemporary instruments available.

The tool could have originally been a stone used for engraving images into another stone; it could have been a feather pen or a fountain pen, a printing machine, a television display, or a film reel. Every culture's successive generations have used the tools at their disposal and constructed their unique storytelling techniques and modes of narrative presentation."(p.7)". Various societies throughout history employed diverse methods to convey narratives, although all of them served as vehicles for imparting knowledge and facilitating education. (Collins & Cooper ,1997).

Storytelling, in its diverse forms, can serve as a means to motivate, educate, document occurrences, amuse, and transmit cultural heritage and norms (Collins & Cooper, 1997). Bruner (1986) and Dewey (1944) emphasized the significance of storytelling in constructivist teaching. They argued that storytelling enables learners to integrate their existing experiences and knowledge with new experiences, facilitating synthesis and learning.

According to Haven (2007: 71), memory champions use storytelling to give relevance and context to information. According to him, when we connect important material with narratives, the listener stores it in his mind and memory. There is a positive correlation between the intensity of emotion experienced during an incident and the individual's ability to recall it. Employing narratives in all cases will improve memory and aid in the process of recollection. (2007,P. 68).

Given that tales are widely recognized by researchers and educators as an essential resource for language instruction, storytelling should be exploited as an effective platform/tool to actively include learners in the process of language acquisition. Hence, it is imperative to include it in the official curriculum for English language instruction in Algerian schools. In recent years, due to the rapid advancement of technology and globalization, storytelling has evolved into a more advanced and interactive tool known as "Digital Storytelling". This tool combines new multimedia instruments and allows teachers to create an engaging and motivating learning environment in the classroom. (Signes, 2008; Yang, 2009).

### **2.11.2 Digital storytelling**

Digital storytelling revolutionizes the traditional methods of written or oral storytelling by incorporating computer-generated text and multimedia elements. (Frazel, 2010, p. 1) Various terms are employed to refer to digital storytelling, including digital documentaries, computer-based narratives, digital essays, electronic memoirs, and interactive storytelling. However, they all share the common objective of merging the craft of storytelling with a range of multimedia elements, such as images, music, narration, text, and video clips, to create a captivating and engaging narrative for the audience. (Robin, 2019)

Meadows defines digital stories as a concise, personal narratives conveyed through multimedia, and are characterized by heartfelt expression. He stated that anyone from all over the world have the ability to generate these narratives on any topic and publish them digitally across the entire planet. (Cited in: Robin, 2019) According to Ohier (2007, pp. 56–58), a digital story is defined as any form of media that uses digital technology to create a narrative. Digital stories can have varying

lengths, but in educational contexts, they often span from two to ten minutes. Digital storytelling spans a wide range of subjects, including personal narratives, historical chronicles, local inquiries, cosmic explorations, and various other topics (Source: Robin, 2019)

Based on these definitions, a digital story is a concise, first-person video-narrative that is produced by integrating various multimedia tools, such as images, audio, videos, and music, with recorded voice and other sounds. The primary aim of digital stories is typically to entertain or effectively communicate a specific message.

### **2.11.2.1 Digital Storytelling Components**

The following are some of the seven components of digital storytelling that have been developed by the Center for Digital Storytelling (2010):

#### **1. Point of View**

The narrative should make clear the author's goals and point of view.

#### **2. The Dramatic Question**

Each narrative ought to begin with a question that piques the interest of the audience and is answered at the conclusion.

#### **3. Emotional Content**

The audience should be included in the story by the storyteller.

#### **4. The Gift of Voice**

This can be accomplished by giving the story a distinct voice and personalizing it to the audience to make it easier for them to understand.

#### **5. The Power of Soundtrack**

Use appropriate sound effects and music to enhance the narrative.

#### **6. Economy**

Don't overuse audio or visuals to the point where the viewer becomes overwhelmed

## **7. Pacing**

Give the narrative a beat and control the pace at which it is delivered.

### **2.11.3 Using Digital Storytelling In Education**

In recent years, digital storytelling has emerged as a powerful tool for teaching and learning, captivating educators and students alike. DS is predominantly employed in organizations, libraries, and classrooms by users with varying levels of technical proficiency in the present digital age. (Robin, 2019) Teachers became aware of and excited about incorporating digital storytelling into the classroom with the publication Lambert's (2002) book, *Digital Storytelling: Capturing Lives, Creating Community*, and Tom Banaszewski's (2002) article, *Digital Storytelling Finds its Place in the Classroom* (Garrety, 2008).

Due to the growing interest in the use of information and communication technology (ICT) for educational purposes, educators have realized the need to make changes to the methods of teaching and learning. Researchers from around the world have successfully used this interactive tool in their classes and achieved positive outcomes. For example, Xu et al. (2011) found that it improved writing effectiveness, while Verdugo and Belmonte (2007) observed enhanced listening comprehension through the use of digital stories or storytelling. Additional research using digital stories or storytelling have also documented positive outcomes, including heightened children's willingness to acquire knowledge and enhanced performance in science, encompassing learning motivation, attitude, problem-solving skills, and academic achievements (Hung et al., 2012, p. 376).

According to Meadows (2003), the prevalence of digital storytelling has increased due to the affordability of digital devices, the ease of learning how to create digital stories, and the abundance of websites on the internet that allow stories to be shared and viewed. A number of academics concurred that because of the beneficial effects they can have in classrooms, digital stories can be applied in a number of fields, including education. (Morra 2013, New, 2005)

For O'Brien and Scharber (2008), digital storytelling has been suggested as a tool for teaching abilities in a variety of subject areas and literacies. According to Robin

(2009), digital storytelling in the classroom is the process of crafting short stories that help teachers and students improve their ability to gather information, solve problems, and collaborate as a team. Conversely, due to its multipurpose nature, Digital Storytelling was considered by Thomas & Page (2011) as an indispensable teaching aid for language acquisition.

Digital storytelling is acknowledged as an important tool that improves student engagement in the classroom, grabs their attention, and motivates them to interact with one another (Robin, 2019). According to New's study, digital storytelling is a crucial ability with countless uses in idea communication (2005). He went on to say that when done well, digital storytelling can have a remarkable effect on audiences while also entertaining and educating them. The research study conducted by Sadik (2008) focused on the use of digital storytelling as an integrated approach to promote active student learning. The study's findings revealed that the use of digital story projects by Egyptian teachers significantly enhanced students' understanding of specific course content. The results also indicated that instructors are open to adopting digital storytelling as a means of conveying information and enhancing teaching methods.

According to Tetik and Ozer, the use of DST improves students' understanding of writing, including text types and spelling conventions. (2022) Research has demonstrated that the collaborative aspect of DST cultivates unity and collaboration among students, effectively bridging digital disparities and enhancing proficiency in new literacy forms (Chigona, 2013; Yamaç & Ulusoy, 2016), in addition to promoting constructivist, student-centered methods of instruction. (Smeda et al., 2014), and allowing for active learning, profound reflective practices, project-based learning, and efficient technology integration. (Sadik, 2008; Hung et al., 2012; Erdogan, 2021;)

Further investigations have shown that it can enhance student involvement and motivation, retention, self-perception, and creativity, resulting in an overall improvement in writing performance (Choi & Johnson, 2005; Campbell, 2012; Foelske, 2014; Smeda et al., 2014; LoBello, 2015). Moreover, DST assists educators in establishing a more engaging and captivating environment (Syam, 2022).

In a separate study, Karakoyun and Kuzu (2016) examined the perspectives of 46 sixth-grade students and 8 pre-service teachers on the topic of digital storytelling. The

study's findings demonstrated that engaging in digital storytelling activities significantly improved students' proficiency in various 21st century skills, including collaboration, communication, critical thinking, creativity, problem solving, and literacy in communication technologies. Additionally, these activities also enhanced students' life and career skills, such as adaptability, flexibility, productivity, responsibility, and social and cross-cultural competencies. Several researchers (Czarnecki, 2009; Hung, 2012; Xu et al, 2011) have found that digital storytelling is effective in developing 21st century skills in students.

Niemi et al. (2018) also discovered that digital storytelling is highly effective in cultivating 21st-century skills such as creativity, critical thinking, and digital literacy. According to their research, students who engaged in digital storytelling projects documented greater improvements in these domains in comparison to those participating in conventional writing programs.

Since digital storytelling “captivates and engage” students and fosters the development of their artistic, technical, organizational, and storytelling abilities, it is a popular teaching tool (Stanley & Dillingham, 2011, p. 24) (Ohler, 2005). Since it integrates language, literacy, and technology, it appeals to students who are probably already exposed to a variety of digital media (Stanley & Dillingham, 2011).

A growing corpus of research on the application of digital storytelling in education has shown that it has recently become a potent teaching and learning tool that not only improves language acquisition skills but also engages teachers and students. Most of the research on the use of digital storytelling in education has been done in various European nations. However, there is still a great deal of uncertainty regarding the usefulness of using DST in Algerian education, particularly in rural areas or at Higher education level which is the primary aim of the current study.

#### **2.11.4 Integrating DST into narrative writing courses.**

The rise of digital technologies has given way to the growth of digital storytelling as a potent instrument for instructing and evaluating narrative writing. Digital storytelling involves the integration of narratives with digital components such as images, music, and

video, as described by Robin (2008). The efficacy of this strategy in enhancing student engagement in writing is remarkable. In a study conducted by Sadik (2008), it was discovered that students exhibit higher levels of motivation and engagement in writing tasks when they employ digital storytelling techniques. Yang and Wu (2012) expanded upon this concept, demonstrating that digital storytelling initiatives have the potential to enhance critical thinking skills, increase motivation to study, and improve academic achievement.

However, it is not solely focused on academic performance and skills. Hull and Katz (2006) contend that digital storytelling facilitates the cultivation of multimodal literacy among students, which is a vital skill in today's digital world. Their research demonstrates the capacity of digital storytelling to enable students to articulate their identities and experiences in manners that conventional writing assignments may not facilitate.

While there is existing literature on the integration of Digital Storytelling (DST) in Algerian universities (Hafidi and Mahnane, 2018; Kassous and Sarnou, 2021; Mselem and Abbaci, 2023), it still remains insufficient. Based on the available literature, there is a limited amount of research that specifically explores the advantages and challenges associated with integrating DST into Algerian writing classrooms. and rare empirical research examining the impact of DST on students narrative writing performance in different criteria of evaluation within the Algerian higher education context.

There is a limited amount of research that has investigated the possible benefits and challenges of utilizing DST (Digital Storytelling) to improve language acquisition (Nouari, 2023). However, these studies frequently lack a long-term outlook, generally concentrating exclusively on immediate outcomes without offering specific frameworks that instructors may utilize to efficiently integrate DST into EFL writing instruction. To address these gaps, an in-depth investigation based on actual classroom experiences is required, especially those of educators who have actively employed DST. This research would offer useful insights on the implementation of DST in EFL narrative writing courses and assess its feasibility in the Algerian higher educational context, which is influenced by a diverse range of cultural backgrounds and technical obstacles

### **2.11.4.1 Multimodal Writing**

In the 21st century, digital multimodal writing has become increasingly important and many researchers in the field have supported its positive impact on developing second language (L2) writing ability. Some of these researchers include Cope & Kalantzis (2015), Garcia & de Caso (2006), Grapin & Llosa (2020), Jiang & Ren (2020), Kern & Schultz (2005), Lutkewitte (2014), and Warschauer (2009). In addition, multimodal composition, which involves creative writing using flexible and engaging methods, contributes to the improvement of motivation for developing writing skills among second language (L2) learners (Dymoke & Hughes, 2009).

DS follows a similar writing process to traditional pen-and-paper writing, where students write using one mode. However, unlike traditional methods, DST enhances the range of expression by incorporating various communication channels that are applicable to real-life situations (Connolly, 2008; Harrison, 2011). Students will acquire classic writing standards in writing classes, while simultaneously utilizing multimedia technologies to communicate their messages in many modalities, in addition to written language.

Through digital storytelling, students have the ability to combine various multimedia components. Engaging in this activity not only enhances their ability to tell stories but also expands their comprehension of narrative techniques (Vasudevan et al., 2010). In addition, Lambert (2013) highlights that the use of multimedia can enhance the attractiveness and accessibility of stories to a broader range of audience.

### **2.11.4.2 Collaborative writing**

Yuksel et al. (2011) state that digital tools facilitate collaborative work among students on narrative projects, allowing them to benefit from each other's individual skills. The cooperative setting offered by DST activities fosters peer learning, as students acquire new competencies through observation and interaction with their peers. During the digital storytelling process, people participate in an ongoing cycle of exchanging,

modifying, and enhancing one other's contributions. This promotes a learning community in which students are not just passive recipients of knowledge, but active contributors in collaboratively producing knowledge with their peers. Ultimately, digital storytelling fosters a collaborative and reflective learning experience, where students are motivated by their individual contributions and the overall success of the group.

### **2.11.4.3 Cultural embodiment**

Skinner and Hagood (2008) argue that incorporating digital tools into storytelling allows students to merge traditional oral or written narratives with multimedia components, such as photographs, music, and video, that are relevant to their cultural origins. The use of a multimodal approach empowers students to express complex and refined perceptions of their identities. Through digital storytelling, students are able to depict their narratives using methods that beyond the limitations of language alone.

Furthermore, the capacity to spread digital narratives to a wider range of people, both within and beyond their local communities, fosters intercultural discourse and comprehension. Through the act of sharing their cultural narratives, students enhance the classroom atmosphere by fostering a greater sense of diversity and inclusivity, where many viewpoints are recognized and valued. Digital storytelling is especially beneficial in multicultural educational environments since it acts as a link between other cultures, promoting empathy and mutual respect among students.

Essentially, digital storytelling allows students to surpass the limitations of conventional writing or speaking, equipping them with the means to investigate and articulate their cultural identities in a more imaginative and energetic manner. This story

construction method facilitates enhanced personal and cultural expression, enabling students to establish a profound connection with their own heritage. Additionally, it contributes to fostering a more inclusive and culturally conscious learning environment.

## **2.12 Obstacles of Integrating DST in Writing Courses**

Supervising and guiding the development of a class of individual students' digital storytelling projects can be tiring. In her study, Iannotti (2005) discovered that despite thorough examination of her students' story drafts, a significant number of them became confused or disoriented during the writing process (p. 11). Based on her findings, she reached the conclusion that while digital storytelling offers valuable, pertinent, and genuine learning opportunities for students, it should be approached in a straightforward manner, involving collaborative effort and setting achievable objectives (ibid, p.12). Additionally, there is a potential risk that students may become distracted by the technology aspects of digital storytelling, thereby diminishing their focus on the fundamental task of narrative production.

Stanley and Dillingham (2011) emphasize that the narrative holds greater significance than the digital format, whereas Ohler (2008) recognizes that no technological advancements or special effects can substitute for a well-crafted story that incorporates literary aspects and human expression (p. 6). Although digital storytelling has limits, it possesses significant potential to impact, captivate, and engage learners from various fields.

## **2.13 Assessment of Digital Narratives**

Ohler (2013) recommends adopting digital portfolios for evaluating digital narratives. This technique enables educators to assess both the narrative content and the technological competencies required for producing digital stories, so providing an in-depth view on students' narrative proficiency in the era of digital technology.

Furthermore, Robin (2008) and Kearney (2011) contend that conventional assessment instruments are insufficient for evaluating the multifaceted components of digital narratives. It is recommended that assessment frameworks incorporate both the narrative elements (such as story structure, coherence, creativity) and the technical features (such as media integration, editing, and multimedia design). This dual method

guarantees that students are assessed not just on the excellence of their storytelling, but also on their proficiency in using digital technologies to strengthen the tale.

Academics such as Sadik (2008) highlight the significance of incorporating traditional storytelling aspects, even when using digital formats. This entails assessing the narrative framework (introduction, progression, conclusion), the evolution of characters, and the profoundness of the story's themes. Alexander (2011) further explains that in DST, students are required to develop narratives that are both captivating and significant, irrespective of the medium employed.

According to Barrett (2006), DST rubrics need to have flexibility to adapt to individual expression, while yet having well-defined criteria for performance in areas such as narrative coherence, multimedia integration, and technical proficiency. Assessment rubrics should strive to achieve a balance between qualitative aspects, such as creativity and narrative strength, and quantitative aspects, such as technical skill and usage of multimedia.

In summary, evaluating digital stories necessitates a comprehensive strategy that exceeds conventional assessment techniques. Academics such as Robin (2008) and Kearney (2011) emphasize the significance of maintaining a harmonious blend of narrative quality and technical expertise, while also taking into account creativity and the act of creation. By employing rubrics, reflective journals, and incorporating multimodal criteria, DST projects are evaluated in a manner that appreciates both narrative and the creative usage of digital tools.

## **Conclusion**

Teaching narrative writing holds great significance in the field of literacy education. The influence it exerts on students academic achievement and personal development is profound. Teachers can assist students in developing their narrative writing skills by emphasizing important narrative aspects, implementing efficient structural frameworks and using diverse assessment approaches.

Digital storytelling has fascinating opportunities for captivating students and evaluating their work through novel methods. With the continuous advancement of technology, there is a growing need for further research to investigate its potential in enhancing the teaching and evaluation of narrative writing. Potential future research initiatives may explore the enduring impacts of digital storytelling on writing proficiency, the use of artificial intelligence in instructing narrative writing, and the possibilities offered by virtual reality and augmented reality in crafting immersive narrative experiences.

The primary objective of incorporating digital storytelling into the teaching of narrative writing is to enhance students' ability to express themselves as skilled storytellers. The goal of this study is to provide students with the necessary abilities to successfully communicate, analyze information, and articulate their own views in this increasingly intricate and interconnected world.

# **Chapter Two**

## **Methodology**

# Chapter 2: Methodology

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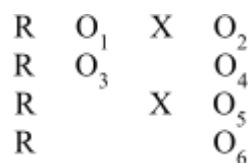
## Introduction

This chapter outlines the design and methodology adopted by the current research to investigate the effectiveness of DST in enhancing students' narrative writing performance. It provides a comprehensive overview of the research design and methodologies, participants' demographics, contextual setting, instrumentation, and a discourse on the materials and techniques employed for data analysis, followed by a discussion of the study's procedural steps, ethical considerations and limitations.

## Research Design

The current study adopted an experimental research design, particularly the Solomon four-group design, which is widely acknowledged for being the first design to explicitly address external validity, hence improving the ability to generalize experimental findings. (Campbell,1963,P24,25)This design is distinguished by the incorporation of four groups, two experimental groups and two control groups, as shown in the figure below the first row represents experimental group 1, the second represents control group 1, whereas the third row represents experimental group 2 and the last row represents control group 2. The design can be visually displayed in Figure 2 as follows:

**Figure 2** *The Solomon Four-Group Design. (Campbell and Stanley, 1963,P.24)*



In the figure above, (R) represents the random assignment or randomization process, which means that the participants or groups were randomly assigned to either the experimental groups or the control groups. The symbols (O<sub>1</sub>) and (O<sub>3</sub>) denote the initial observations or measurements obtained from the first experimental group and control group, respectively, before the introduction of the intervention (X). In other words, it is

the pre-test. (X) Represents the treatment or intervention that is, the implementation of Digital storytelling for the experimental groups 1 and 2. On the other hand, the symbols (O<sub>2</sub>), (O<sub>4</sub>), (O<sub>5</sub>), and (O<sub>6</sub>) stand for the post-test observations or measurements obtained from the experimental groups and the control groups, respectively, following the implementation of the intervention (X) in the experimental group. However, the lack of X in row 2 and 4 distinguishes the control groups that did not receive the intervention and instead followed the conventional writing instruction method and the lack of O symbols in row 3 and 4 suggests that both the experimental group 2 and the control group 2 didn't receive a pre-test.

The key elements of this design are: First, randomization (R) which necessitates the random assignment of participants to the experimental and control groups. Secondly, the pre-test (labeled as O<sub>1</sub> and O<sub>3</sub>) evaluates both groups prior to the intervention to provide a baseline for comparison and account for any pre-existing discrepancies. Next, the intervention (X), also known as the Digital Storytelling treatment, is only administered to the experimental groups, whereas the control groups do not get any intervention. After the intervention, the Post-test (labeled as O<sub>2</sub>, O<sub>4</sub>, O<sub>5</sub>, and O<sub>6</sub>) are conducted to assess the impact of the treatment (X) on the experimental groups as compared to the control groups.

This design allows researchers to evaluate the direct impacts of testing and the relationship between testing and the experimental variable X (Digital Storytelling) by incorporating pre-tested and non-pre-tested experimental and control groups (from O<sub>1</sub> to O<sub>4</sub>). (Campbell and Stanley, 1969, P.25) This implies that researchers can evaluate the effectiveness of the intervention while taking into account potential variables that could impact the outcomes, which is commonly known as the testing effect. Engelenburg suggests that conducting a pre-test can offer participants additional opportunities to practice, receive item-specific training, or enhance their search strategies. (1999, P.2). Additionally, it might be argued that conducting a pre-test, for example, can stimulate curiosity or raise awareness among participants, a phenomenon known as pre-test sensitization, which can also impact the effectiveness of the treatment. (ibid)

The rationale behind choosing the Solomon Four-Group design for this study was for its numerous strengths regardless of its complexity and cost. Firstly, it facilitated the comparison of the experimental groups, which received the digital storytelling intervention, with the control group, which received traditional writing instruction, enabling the researchers to assess the efficiency of the intervention while considering and controlling other factors that could influence the results such as the testing effect, thereby enhancing the study's internal and external validity. (Campbell and Stanley, 1963, P.24)

### **3.2 Research Approach**

For the sake of adding to the richness of the current study, a mixed-methods approach was adopted. This approach combines several methods and is often referred to as a “triangulation of methods.” (Neuman, 2014, p. 167), Christensen et al believed that “the use of several methods provides a better understanding of the phenomenon being investigated.” (2013, p.69) further encouraging the incorporation of quantitative and qualitative data collection and analysis methods for this study.

The quantitative aspect of the study involved assessing students' narrative writing performance through pre- and post-intervention tests and conducting surveys with both students who participated in the study and Algerian university teachers who volunteered to take part in the survey for documenting their attitudes and perceptions towards the integration of Digital Storytelling into the writing instruction curriculum in an Algerian higher education setting.

And analyzing the observation checklists created to assess the learning environment while integrating Digital Storytelling activities. Whereas the qualitative aspect is manifested in the collection of data that complete or backup the quantitative findings of the study including the classroom's learning environment, obstacles of the DST implementation, overall teachers' and students' views and opinions on the integration of DST in the writing Curriculum at the Algerian Higher education level.

The rationale for choosing a mixed-methods approach was two-fold. Initially, it enabled a thorough understanding of the research problem by gathering data from several sources, hence improving the reliability and validity of the findings by triangulation. Through quantitative data precise assessments of Narrative writing performance was achieved, while the qualitative data provided in-depth insights into the participants' experiences, beliefs, and attitudes, leading to a full picture of the phenomenon being studied and allowing a multidimensional investigation of the research problem.

### **3.3 Population and Sampling**

Neuman defined the target population as “...The concretely specified large group of many cases from which a researcher draws a sample and to which results from the sample are generalized.” (2014, P,252) This study targeted Second year LMD students at the English department of Hassiba Ben Bouali University of Chlef, during the academic year of 2021-2022. The whole population was comprised of 200 students enrolled in a written expression module specifically designed to teach academic writing skills, including narrative writing which is the main focus of the current study and the reason behind choosing such a population.

On the other hand, a sample, which refers to “... a set of elements taken from a larger population. ” or “a subset of the population.” (Christensen et al, 2015,p.161,162; Lohr, 2019, P. 3) Whereas, the act of sampling involves the procedure of selecting items from a population in order to get a representative sample. The primary objective of sampling is to acquire a representative sample, which is a sample that closely resembles the population in terms of all characteristics. (Christensen et al, 2015,P.162) One of the most acknowledged sampling technique in experimental research is randomization. (Campbell and Stanley, 1996, P.13/14 To ensure validity and generalizability of the findings, this study adopted a systematic sampling technique which is favorable when a list of the whole target population is available which is generally referred to as a sampling frame that is “a list of all the elements of a population.” (Christensen et al,2015,P,163) Systematic sampling is considered an EPSEM. (Kalton, 1983 as cited in Christensen et al, 2015, P,169)

An EPSEM stands for the Equal Probability of Selection Method referring to any sampling method in which each individual member of the population has an equal chance of being selected for inclusion in the sample.(Christensen et al, 2015, P,162) The main objective behind adopting such sampling technique is to choose a representative sample for the target population. Therefore, these steps were followed.

First, a sampling frame of all Second year undergraduate students (200 students) at HBB University was gathered and then the sampling interval was determined, that is the size of the target population (200 student) divided by the desired sample size (100 student) which is “symbolized by the letter  $K$ ”. (Christensen et al.2015,P,169) which is manifested as follows for this study:

$200/100 = 2$  which means  $K= 2$ . After the sampling interval had been calculated, the next step was to assume a random number between 1 and  $K$  which was determined as 2 for the current study, consequently selecting each  $K$ th number, that is every 2<sup>nd</sup> person on the list which is represented as follows: starting from 2<sup>nd</sup> ,4<sup>th</sup> ,6<sup>th</sup> ,8<sup>th</sup> ,10<sup>th</sup> , 12<sup>th</sup> ,14<sup>th</sup> ,16<sup>th</sup> ,18<sup>th</sup> ,20<sup>th</sup> ...etc until the desired sample size was reached (100).

The following step and the most crucial step for any experimental research design is the random assignment of students to the experimental and control groups. Creswell stated that the most thorough approach is to randomly assign individuals to the treatments. Random assignment is the process of assigning individuals at random to groups or to different groups in an experiment.” (Creswell, 2012,P, 296) After determining the final list of 100 students in the sample, the participants were randomly assigned to the experimental groups (EG1 and EG2) and control groups (CG1 and CG2) in equal sizes 25 student for each group .

For the sake of adding more depth and various perspectives on the implementation of DST in Algerian higher education’s written expression curriculum, 44 teachers from different Algerian universities voluntarily participated to share their experiences and views on DST’s implementation, thereby adding to the richness and diversity of the study’s findings.

### **3.4 Instruments**

Since this research adheres to a mixed method design, the quantitative data was collected through pre and post tests, and students' and teachers' surveys and the Classroom Observation Checklists. On the other hand, qualitative data was also collected from the observation checklists' written comments and the open-ended questions included in both surveys for triangulation and rigorousness of the study.

#### **3.4.1 Tests**

To measure the impact of digital storytelling on students' narrative writing performance, pre-tests and post-tests were employed. Due to the nature of the design only experimental group 1 (EG1) and control group 1 (CG1) received the pre-test. The process involved administering narrative writing tests before and after the intervention (the implementation of DST) for EG1 who received the treatment and CG1 who received traditional writing methods whereas experimental group 2 (EG2) and control group 2 (CG2) received a post-test only.

##### **3.4.1.1 The Nature And Aim Of The Tests**

The narrative writing tests were designed to measure students' abilities to write well-structured and engaging narrative paragraphs. These tests aimed at capturing various aspects of narrative writing performance, including Overall organization , language use, coherence, conventions and creativity.

##### **3.4.1.2 Pre-Test**

Before the intervention, a pre-test was administered to both EG1 and CG1. Students were given a writing task that requires students to compose a narrative paragraph within a specified word and time limit. The pre-test served as a baseline measure of students' narrative writing performance before the introduction of any instructional interventions

##### **3.4.1.3 Treatment (Digital Storytelling Intervention)**

Following the pre-test, experimental group 1 and experimental group 2 received instruction in narrative writing and participated in digital storytelling activities. The control groups, on the other hand, received traditional instruction in narrative writing. The digital storytelling intervention involved activities such as storyboarding, integrating multimedia elements, and providing feedback from peers. The goal of this intervention

was to improve students' narrative writing skills through a creative and engaging approach.

#### **3.4.1.4 Post-Test**

After the digital storytelling intervention, a post-test was given to both experimental groups (EG1, EG2) and the control groups (CG1, CG2). The post-test was similar in format to the pre-test, but students were given a different narrative writing task. They were asked to write a narrative paragraph in a different genre, within a specific word and time limit. The post-test aimed to measure any changes or improvements in students' narrative writing performance after the instructional interventions.

### **3.4.2 Surveys**

#### **3.4.2.1 Students' Prerequisites Survey**

Prior to the experiment, a brief and concise survey was conducted to get some baseline information on students' opinions towards integrating technology in writing classrooms. The objective was to investigate their access of digital devices, self-assessed competence in using these devices, acquaintance with Digital Storytelling (DST) as a concept, and their familiarity with video editing apps and tools. Having this first information is crucial for comprehending the participants' technological competency and readiness to be exposed to DST in their writing tasks, besides helping the researcher to decide which tools are preferred and suitable for the DST implementation journey. (See Appendix B)

#### **3.4.2.2 Students' attitudes Survey**

A survey titled "Students' Attitudes towards the Implementation of Digital Storytelling in Writing Classrooms" was designed to explore students' experiences and overall attitudes towards implementing DST in the written expression classroom. The survey is divided in two parts. The first part collects demographic data about the participants, such as their age range and gender. The survey comprises 15 statements rated on a 5-point Likert scale (from strongly agree to strongly disagree), organized into five thematic areas as follows: (See Appendix B)

**Classroom Atmosphere and Engagement:** it examines the impact of DST on the overall atmosphere of the classroom and the level of student involvement. The questions in this part evaluate the impact of DST on creating an enjoyable environment, fostering a greater interest in writing, and enhancing students' ability to maintain concentration on activities.

**Narrative Writing Skills Improvement:** it assesses students' attitudes towards the effectiveness of DST in improving their narrative writing abilities. Questions relate to enhancements in organization, structure, grammar, spelling, and the development of new vocabulary.

**Addressing 21st Century Skills:** This theme explores how students perceive DST as a pedagogical tool that contributes to the development of some of important skills needed in the 21st century. These skills include technical proficiency, creativity, self-directed learning, cooperation and collaboration with peers.

**Challenges and Obstacles:** This theme highlights the difficulties that students encounter during the DST process. with a follow up question that encourages participants to enumerate particular hindrances and difficulties they faced.

**The Appreciated Value of DST:** this theme explores the perceived worth of DST. The questions center around the significance of DST assignments, its relevance to future professions, and the support provided for incorporating DST into the writing curriculum and other academic modules. Follow-up questions aim to elicit reasons for this support.

### **3.4.2.3 Teachers' perceptions Survey**

A survey titled "Teachers' Perceptions towards the Implementation of Digital Storytelling in Writing Classrooms in Algerian Higher Education" was created to investigate Algerian university level teachers' views, perceptions, and recommendations regarding the integration of Digital Storytelling (DST) in narrative writing classrooms in the Algerian Higher Education context.

The survey has two parts: Part One gathers demographic data about the participants,

such as their age range, gender, institution affiliation, position/role, and years of teaching experience. Part Two focuses on collecting teachers' perspectives, and recommendations regarding the effective integration of DST in the writing classroom instruction in Algerian higher education. This part comprises a sequence of ten statements related to the incorporation of DST in the teaching of writing in Algerian higher education. Participants are requested to assess their degree of agreement with each statement using a five-point Likert scale (ranging from Strongly Agree to Strongly Disagree). They are also encouraged to provide any relevant qualitative feedback through open-ended questions (see Appendix A).

The statements in the survey are arranged based on predetermined themes to serve the overall objective of the study.

### **Necessity of Technology Integration in Algerian Classrooms:**

Statement one assesses teachers' overall attitudes towards technology integration in today's education, offering baseline information for the incorporation of DST.

### **Integration of technology in writing classes:**

Statement two examines attitudes toward the use of technology in writing classes and records teachers' experiences with the integration.

### **Familiarity with Digital Storytelling:**

Statement three considers investigating teachers' prior knowledge about DST, which may impact the attitudes towards its adoption.

### **The Implementation of Digital Storytelling in writing classes:**

Statement four is a follow-up question aiming at identifying teachers who have actual experiences in the implementation of DST in writing classes, with a follow-up question for collecting qualitative data on the overall experiences categorized as favourable or unfavourable. Statement five documents Teachers' views on the potential benefits of Implementing Digital Storytelling in the narrative writing classroom for students, while statement six investigates whether DST is perceived as a tool for improving student involvement specifically and positively influencing the overall learning environment.

Statement seven examines teachers' viewpoints regarding possible hindrances associated with technical infrastructure or insufficient resources that could impede the adoption of DST in Algerian universities. Participants are also urged to mention any additional barriers thought of as potential hindrances to the implementation.

#### **DST Training Requirement:**

Statement eight assesses whether teachers perceive the implementation of DST as a demanding tool that necessitates professional development and training in order to facilitate its incorporation.

#### **Potential success for DST's implementation in Algerian Higher Education context:**

Statement nine records teachers' beliefs on the feasibility and success of incorporating DST into the EFL writing curriculum at Algerian universities. In a follow-up open ended question, Teachers are requested to propose strategies and recommendations for effectively implementing DST in an Algerian higher education context.

#### **Additional notes and perspectives:**

Question 10 is an open ended with no specific answer option, allowing respondents to offer any additional perspectives or suggestions that weren't addressed in the previous questions, thus enriching the breadth and richness of the qualitative data gathered for the study.

### **3.4.3 Observations**

A Structured Classroom Observation Checklist (SCOC) was created and used as a secondary instrument for collecting data in this research. The Media Guide described structured observation as "a means of gathering quantitative data" (p.30). It is a tool for documenting various types of behavior in educational and other interactional contexts. Unlike field notes and participant observation, it adopts a strict predetermined observation "schedule," (The Media Guide pp.31, 33), Cohen et al. (2006), and Hammersley et al. pp.197, 199) However, acknowledging the fact that "Some published interaction schedules are difficult to use, and a schedule that works perfectly well in one context may not in another" as Hammersley et al, p.204 argued. The study's SCOC schedule designed

and adapted based on the Technology Integration Matrix (TIM) developed by The Florida Center for Instructional Technology (specifically designed for assessing the learning environment during the integration of DST activities in the written expression classroom. The main Objective of this SCOC is to record the effective harvesting of technology integration for a meaningful learning environment in written expression modules at the Algerian higher education level.

The creation of this SCOC was also inspired by the Effective Learning Environments Observation Tool (ELEOT) (AdvancED, 2014), a well-established and validated tool for monitoring and evaluating classroom environments. Nevertheless, the SCOC was modified and tailored specifically for the purpose of this study. The purpose of the SCOC was to collect both quantitative and qualitative data to obtain an in-depth observation of the classroom dynamics as it was carefully designed to incorporate criteria and features that are in line with the research objectives and relevant the literature on classroom atmosphere, and meaningful technology integration for an effective learning environment. (See Appendix C)

In order to maintain a consistent and unbiased observation, a rubric was designed to accompany the observation tool with explicit descriptions and guidelines for every rating level within each criterion, consequently reducing subjectivity and maintaining the reliability and consistency between observers during the observation process. Furthermore, this SOCT was examined prior to its application in the classroom by a jury consisting of two qualified teachers in the field of English language teaching. The feedback and suggestions provided by them were used to improve and validate the current observation tool, hence increasing its content validity and relevance

### **3.4.3.1 Observers**

For this classroom observation procedure, two trained observers were used to provide a "triangulation of observers" (Neuman, 2014, P, 166) in order to avoid any "limitations of a single observer which may manifest in lack of skills in the area, a biased view on the issue, inattention to certain details." (Neuman, 2014,P, 167)

### **3.4.3.2 Observation procedures**

The observers independently conducted structured observations during

three teaching sessions for each group, each session lasting approximately one hour and half. The observers were positioned at the back of the class for a better, inclusive view of the classroom. In order to maintain reliability and prevent any potential biases, the observers were intentionally kept unaware of which group received the digital storytelling treatment. This practice is commonly referred to as "blinding" (Campbell & Stanley, 1963).

The researchers fully acknowledge the qualitative nature of the observation instruments, the selection of this structured observation instrument was to acquire both quantitative and qualitative data. The scores obtained from this SCOC yielded quantitative data, In addition, observers had the ability to document qualitative notes and descriptions in order to capture further observations or relevant scenes, thereby yielding rich qualitative data for thematic analysis.

The SCOC allowed for triangulation, enhancing the credibility and trustworthiness of the findings a thorough comprehension of the classroom atmosphere and a different perspective on the influence of incorporating digital storytelling on student involvement and the overall educational environment.

### **3.5 Data Collection and Analysis**

#### **3.5.1 Tests**

The narrative paragraphs produced during the pre-test and post-test were collected and evaluated and rated using a rubric specifically designed for assessing narrative writing paragraphs by four different teachers assigned to rate each group's performances. The rubric was developed by the researchers and inspired by previous rubrics from teachers' resources such as Rubistar (Rubistar, n.d.) and designed based on "The Smarter Balanced Scoring Guide" (2014) with adjustments regarding the level and extended criteria included in this study's rubric. Analytic in Nature, this rubric included dimensions and criteria for evaluating various aspects of narrative writing performance (McKeown and Biss, 2018.P.4) such as organization, Language Use, coherence, Conventions and creativity . Each criterion was assigned a score on a scale (e.g., 1-3 or 1-5), allowing for a quantitative assessment of students' narrative writing performance.

The rubric was also sent to a jury of three professional teachers in the field of writing instruction for evaluation and inter-rater reliability testing. (McKeown and Biss, 2018) It was later adjusted according to the guidelines of the jury and then tested

for Validity and reliability again. The rubric’s validity and reliability was rated based on the adapted modal comprising a set of questions suggested by Moskal & Leydens (2000) that might prove useful in determining whether this scoring rubric is appropriate for the stated goal. This table is divided based on the types of validity evidence under evaluation.

**Table 1:**

*Questions To Assess Each Validity Type In The Rubric*

Content	<ol style="list-style-type: none"> <li>1. Is any irrelevant content addressed in the evaluation criteria?</li> <li>2. Do the scoring rubric's evaluation criteria cover all aspects of the desired content?</li> <li>3. Does the task contain any content that ought to be assessed using the rubric but isn't?</li> </ol>
Construct	<ol style="list-style-type: none"> <li>1. Are the scoring criteria used to assess all significant aspects of the intended construct?</li> <li>2. Does the evaluation criteria have any relevance on the construct of interest ?</li> </ol>
Criterion	<ol style="list-style-type: none"> <li>1. How do the scoring criteria represent competencies that would indicate success in related or future performances?</li> <li>2. What crucial elements of the performance in the future or in a related field may be assessed using the evaluation tool?</li> <li>3. How are the significant elements of the performance in the future or in a related field measured by the scoring criteria?</li> <li>4. Do the scoring criteria take into account any aspects of the future or relevant performance that are missing?</li> </ol>

Two expert ratters accepted to rate the rubric on its overall validity and reliability of the final rubric to avoid any rates that are due to randomness or chance. To measure ratters’ agreement on the validity and reliability of the Narrative Writing Performance (NWP) rubric Cohen’s Kappa inter-ratter reliability was conducted using SPSS version

23, the table below demonstrates the final results after adjustments were made to the rubric.

**Table 2**

*Cohen's Kappa measure of agreement among ratters on the validity of the NWP rubric.*

	Kappa Value	Approx. Sig.
Measure of Agreement	1.000	.003
N of Valid Cases	9	

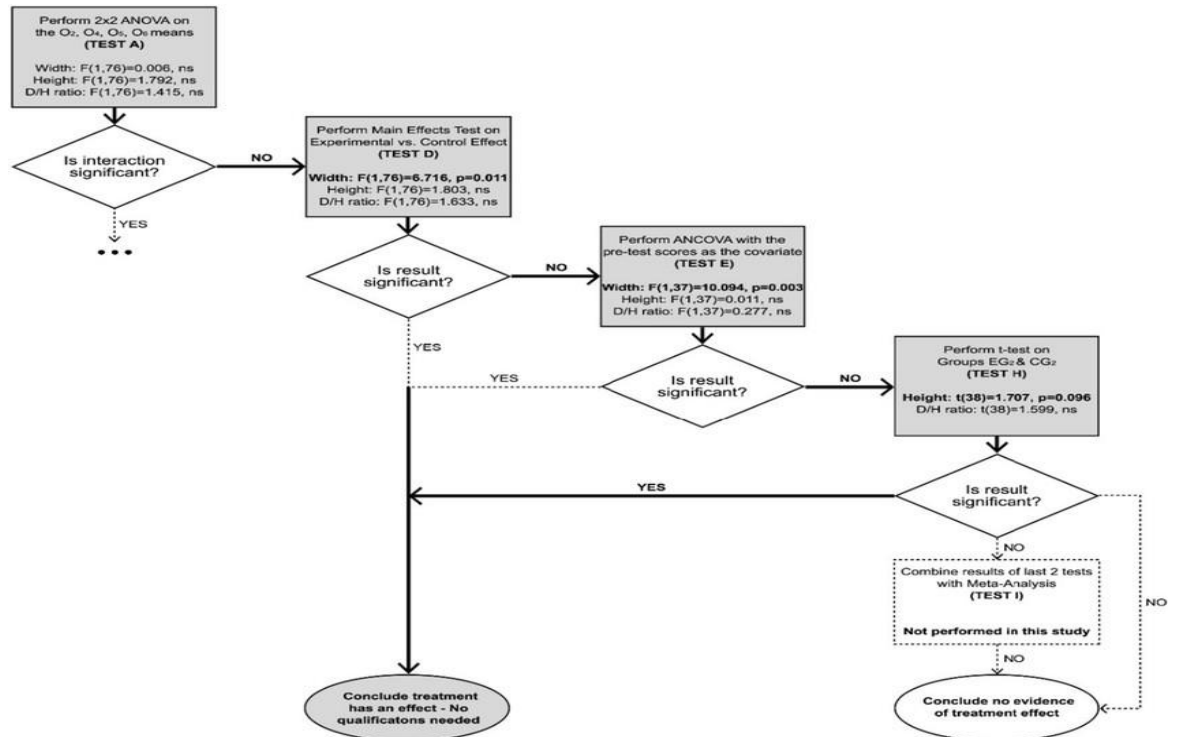
Cohen proposed the following interpretations for the Kappa result: values  $\leq 0$  represent no agreement, 0.01–0.20 represent none to minor, 0.21–0.40 represent fair agreement, whereas 0.41–0.60 represent moderate agreement and, 0.61–0.80 represent considerable agreement, and 0.81–1.00 represent nearly perfect agreement. (McHugh, 2012.p.297) Indicating that the NWP rubric adopted for the study is considered valid and reliable with an estimated Cohen's Value of 1.00 demonstrating perfect agreement

After rubric validation, the pre-test and post-test scores for all the groups were then analyzed using appropriate statistical tests based on the homogeneity and normality of the data distribution, to determine if there were significant differences in narrative writing performance between the experimental and control groups, as well as within each group (pre-test vs. post-test) to provide insights into the effectiveness of the digital storytelling intervention in enhancing students' narrative writing performance compared to the traditional instructional approach. Effect sizes are also calculated to estimate the magnitude of the intervention's impact.

By analyzing the pre-test and post-test data through statistical methods, the study aimed to answer the first research question: "Does digital storytelling enhance students' narrative writing performance?" and the sub question arising from the nature of the research's design. Including:

1. Does the administration of a pre-test affect students' post-test scores for the pretested groups?

The statistical methods adopted for effectively analysing this Solomon four group design data, was Braver & Braver 1988 that was also built upon other suggestions of Scholars such as Campbell and Stanley, (1963) and Huck and Sandler (1973). Figure 3 below shows the procedures taken in details with some modification on the original flowchart based on the nature of the current study.



**Figure 3**

*flowchart suggested by Braver and Braver for Statistical Treatment of the Solomon Four Group Design(1988)modified by Choi & Kim (2023)*

### 3.5.2 Observations

The Structured Classroom observations Checklists that were designed to observe both Experimental groups (EG1 and EG2) for the purpose of evaluating the overall DST’s implementation based on the TIM (Technology Integration Matrix) for creating meaningful learning environments. And the answer the second research question “ Does the integration of Digital Storytelling in Writing classrooms creates a meaningful learning environment?”

The main objective of this rubric is to detect whether the incorporation of Digital Storytelling (DST) into writing instruction for undergraduate students proves effective for establishing a meaningful learning environment. The observation checklist is specifically designed for use by two observers in order to guarantee reliability and consistency throughout the evaluation process. Four criteria of observation inspired and adapted from the TIM model are included in this SCOC and described as follows:

Active Learning criterion measures and observes the extent to which students autonomously interact with the digital tools and investigate multimedia elements during their DST process.

Its objective is to observe whether students are actively and independently engaging in the learning process through the use of DST without teacher facilitation.

Collaborative Learning Criterion aims at observing whether DST activities facilitate and encourage collaborative initiatives among students with limited teacher involvement, its main objective is to assess the efficacy of DST in promoting collaboration and interaction among peers.

Constructive Learning is a criterion that assesses how the use of DST enables students to autonomously develop new knowledge and employ critical thinking skills. Its objective is to observe the extent to which DST encourages the construction of knowledge and comprehension of the narrative structures besides using problem solving skills to overcome technology related obstacles without teacher interference.

Authentic Learning criterion aims to observe whether DST activities reflect the real-world situations. Its objective is to determine the extent to which DST activities integrate learning with authentic experiences.

Class Management this criterion is devoted to observe whether the learning is well managed with minimal disruptions. Its main objective is to assess whether the class time is effectively exploited and controlled with less disruptive behaviours and that students maintain focus throughout the DST process with the presence of technology tools

These five criteria are included to assess the effectiveness of DST technology

integration to create a meaningful learning environment inspired by the TIM and ELEOT models for achieving effective technology integration and meaningful educational settings. (see Appendix C for detailed descriptions of the Criteria)

The written remarks by the observers will undergo thematic analysis through Inductive analysis and the findings would be presented in themes or sub themes if available (Thomas, 2003) all describes in details and accompanied with relevant quotes from observers if available.

**Table 3**

*Cohen's Kappa Measures of Agreement Between Observers in all sessions for EG1.*

		Value	Approx. Sig.
Measure of Agreement	Kappa	.848	.000
N of Valid Cases		6	

As stated earlier the kappa's value ranging from 0.61 to 0.80 is regarded as considerable agreement (McHugh, 2012.p.297) Therefore, it is concluded that the observers significantly agree on the observed learning environment.

The quantitative data obtained from the tests and surveys is complemented by the qualitative data gathered through observations and Surveys, providing a comprehensive understanding of the impact of digital storytelling on students' narrative writing skills.

### **3.5.3 Surveys**

Both Teachers' perceptions survey and students' attitudes survey were designed to capture perceptions and attitude of teachers and students' toward the implementation of DST in writing classrooms at an Algerian higher education level. Both surveys are quantitatively analysed using SPSS version 23 measuring and interpreting overall perceptions and attitudes which were later displayed as percentages. Students' attitudes' survey were administered to both EG1 and EG2's students then descriptively analysed and compared to explore attitudes of both groups separately.

Open-ended questions included in both surveys were qualitatively analysed using thematic analysis through an inductive coding approach. Inductive approaches seek to enhance comprehension of complex data by generating condensed themes or categories from raw data often referred to as "data reduction". (Thomas, 2003.P,3)

The process of coding of the data was adapted from Creswell (2002) and illustrated in the table below:

**Table 4**

*The Coding Process In Inductive Coding Analysis*

Initial read of the text data	recognize particular segments of the text	Label information on segments to produce categories.	decrease category overlap and redundancy	Design a model with key categories.
Numerous pages of the text	Several segments of the text	Thirty to forty Categories	Fifteen to twenty Categories	Three to eight categories

Note: Adapted from Creswell, 2002, Figure 9.4, p. 266

The process of inductive analysis as adapted from Creswell's table above on the study' qualitative data from open-ended questions included in both teachers' and students' surveys are manifested as follows. First, the raw data was organized in word document file for better visualization, Second, a close Reading and familiarizing with the text was necessary to become familiar with the content and to comprehend the "themes" and details included within it. Third, establishing and defining categories or themes based on the research objectives was next. Then, several readings of the raw data yielded particular categories or themes related to the research aims, and actual phrases in the text segments were also used to build the themes. Constant modifications and improvement were conducted on the categories. Subtopics in each category were added when necessary and relevant quotations were chosen to capture the spirit or central idea of a particular category or theme.

The Inductive analysis findings were typically presented using top-level categories as main headings and specific categories as subheadings. Categories were described using detailed descriptions and relevant quotes to clarify the categories in the text and convey the meaning. (Thomas, 2003)

### **3.6 Implementation Procedures**

For a successful implementation of Digital Storytelling, a structured approach was followed and adapted from Frazel's suggested process of Digital Storytelling. Dividing the process into three important stages including preparation, production and presentation each stage requiring thorough planning from the teacher.

#### **3.6.1 The Preparation Phase**

According to Frazel (2010), digital storytelling can be successfully used in narrative writing sessions through three essential stages: preparation, production, and presentation. In the preparation phase, students brainstorm and plan their digital stories, integrating their story ideas with multimedia components. This phase emphasizes the formulation of the narrative, character arcs, and the establishment of the setting. Students employ storyboarding strategies to map out the storyline and determine how visual and aural components, such as photographs, videos, and sound, would enhance their narrative. This phase permits innovation in envisioning the narrative's development both in written and visual forms.

This phase covered five steps including formulating questions within realistic scenarios, researching relevant information to the topic, drafting the script and collecting peer feedback, performing oral narration, and creating a storyboard. At the beginning of the session, the teacher presents topics grounded in the contexts or experiences relevant to the students' lives and interests, aiming to facilitate and provide more choices to select a topic. Afterwards, students investigate the topic to gather enough knowledge to compose their scripts that depict a coherent and sequential story .

Upon finalizing the scripts, they interrogated one another, participating in peer assessment circles. Students initially practice narrating their stories in a conventional way, which facilitated the identification of crucial elements related to their narratives. Then, students are asked to create a story map to depict the main elements of the story and their interconnections within the overall storyline. For educators, story mapping serves as a foundation for immediate evaluation of students' narratives and offers guidance on enhancing deficient aspects of their compositions. Additionally, students

depict their narratives in a storyboard format, organizing the chronology of scenes, visuals, effects and other digital elements. Each work in this preparation phase was paper-based, necessitating concentration on the content rather than multimedia components. Scriptwriting and story development are essential processes in the creation of digital narratives, as the end output is media-oriented.

### **3.6.2 The Production Phase**

The production phase entails the technological creation of the digital narrative. Students construct or produce the multimedia elements specified during the preparation phase, including recording voiceovers, selecting or producing images, and integrating music. They subsequently employ digital techniques to integrate these components into one cohesive narrative. This phase promotes students' creative engagement with technology, enabling them to refine their narratives through editing, strengthening transitions, and boosting overall coherence. Students frequently participate in peer feedback throughout this stage to enhance their work, acquiring the ability to integrate digital technologies with their written content.

During this phase, students used a video editing tool called *Inshot* for its user friendly aspects and offline options, they created photos and videos using a website called *Adobe spark*, and for students who had less internet connexion a bank of accessible offline resources was offered to them by the teacher. Students created multimedia components and recorded their voices, most of the work was outside of the classroom for more flexibility. Students organized and edited their footage into a digital story.

### **3.6.3 Presentation Phase**

The presentation step allows students to display their finished digital stories to an audience. Students present their narratives, obtaining feedback from both their peers and their teacher. This phase promotes a sense of achievement while facilitating reflective learning, as students evaluate their own work and that of their peers critically. fostering further cooperation, creativity, and critical thinking, and enriching the narrative writing experience by blending multimedia literacy with conventional storytelling methods (Frazel, 2010). During this phase students shared their digital stories and feedback to their classmates displaying a profound interconnection with the subject matter.

# **Chapter Three**

## **Results**

# Chapter 3: Results

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## Introduction

This study was carried out to investigate the impact of DST on narrative writing performance of second year undergraduate students at Hassiba Ben Bouali University. Besides capturing nuanced attitudes and perceptions of both teachers and students towards the integration of Digital storytelling in the writing instruction in an Algerian higher education context, this study also aims at documenting meaningful technology integration practices using DST in writing classrooms. This chapter showcases both quantitative and qualitative analysis results answering the study's research questions and is organized accordingly. All data were analyzed using Statistical Package for the Social Sciences (SPSS) version 23 to answer the following research questions and their corresponding hypotheses in organized stages based on the study's Solomon Four-group design's objective.

1. Does the implementation of DST enhance students' narrative writing performance compared to traditional writing classrooms?  
  
-Sub-question: Does the administration of a pre-test influence the post-test scores for the pretested groups?
2. Does the integration of Digital Storytelling in writing classrooms create a meaningful learning environment?"
3. What are students' attitudes towards the integration of DST in writing classrooms?
4. What are teachers' perceptions of integrating DST in writing classrooms at the Algerian higher education level?

## 4.1 Research Question One

### 1. Does The Implementation Of Digital Storytelling Enhance Students' Performance Across The Narrative Writing Criteria Compared To Traditional Writing Methods?

Before Answering the first research question and its sub-questions and conducting any further analysis, it was important to test the nature of the data distribution to examine whether they are normally distributed or not. Since the number of samples selected is less than 50 in each of the four groups, a Shapiro-Wilk test was suitable to be carried out (Razali & Yap, 2011). After this test determines whether the data are normally distributed or not, suitable statistical tests would be chosen, either parametric or non-parametric tests.

**Table 5**

*Shapiro Wilk test Results for Data Normality.*

Groups	Tests	Organization	Language Use	Coherence	Conventions	Creativity
EG1	Pre-test	.827	.843	.762	.388	.805
	Post-test	.605	.599	.511	.412	.741
CG1	Pre-test	.413	.745	.073	.394	.505
	Post-test	.558	.761	.771	.640	.948
EG2	Post-test	.300	.346	.415	.417	.737
CG2	Post-test	.190	.143	.185	.829	.987

The results from the Shapiro Wilk Test indicated that many of the pretest and posttest scores follow a normal distribution ( $p$ -values  $> 0.05$ ). This justifies the use of parametric tests for further analysis. Based on the Nature and complexity of the current Solomon Four-group design's analysis, It was necessary to follow Campbell and Stanely's, Huck and Sandier (1973), Cuervorst & Stock, 1978; Huck & McLean, 1975; Humphreys, 1976; Scheifley & Schmidt, 1978 and the suggested analysis approach by

Braver and Braver, 1988 that is partially followed based on the nature and objectives of the current study.

The Analysis procedures diagram adopted for this study was previously presented in the methodology chapter (see figure 3). In the first stage of the analysis, a two-way analysis of variance ANOVA with a predefined target of investigating the impact of Digital Storytelling on students' narrative writing performance was conducted. Specifically, hypothesizing that DST would lead to improvements in terms of the five key narrative writing criteria based on the rubric designed for the study: organization, language use, coherence, conventions, and creativity. The results of the first stage are displayed in three stages defined as treatment effect, pretest effect, and interaction effect based on the main research question and its sub-questions with a greater emphasis on the interaction effect between pretesting and the treatment (DST).

The two- way ANOVA was selected appropriate to determine if there were statistically significant differences in posttest scores among the four groups: EG1 (experimental group with pretest), CG1 (control group with pretest), EG2 (experimental group without pretest), and CG2 (control group without pretest), and whether the pretest affected the results or interacted with the treatment (DST). It is important to note that Prior to doing the primary analysis, we assessed the assumptions of normality, homogeneity of variance, and linearity for each of the variables. The skewness and kurtosis readings suggested that the data followed a distribution which appeared normal. The Levene's test was performed to assess the homogeneity of variances, and no significant violations were observed ( $p > .05$  for all tests).

#### **4.1.1 Interaction Effect Between The Pretest and The Treatment**

A two-way analysis of variance (ANOVA) was performed to examine the interaction effect between the pretest and treatment on five predefined criteria for narrative writing performance: Organization, Language Use, Coherence, Conventions, and Creativity. The analyses were conducted to determine whether there was a pretest sensitization and to investigate any possible interaction between the pretest and the treatment on students' narrative writing performance.

### 4.1.1.1 Descriptive Statistics

Table 6 below shows the descriptive statistics of each group displaying means and standard deviation for each narrative writing criterion.

**Table 6**

*Results Of The Descriptive statistics for each Group in Terms of the Five Narrative Writing Performance Criteria.*

<b>Criteria</b>	<b>Group</b>	<b>Mean</b>	<b>STD</b>
<b>Organization</b>	<b>EG1</b>	<b>16.20</b>	<b>2.40</b>
	<b>CG1</b>	<b>12.80</b>	<b>2.30</b>
	<b>EG2</b>	<b>15.70</b>	<b>2.50</b>
	<b>CG2</b>	<b>12.60</b>	<b>2.50</b>
<b>Language Use</b>	<b>EG1</b>	<b>17.00</b>	<b>2.20</b>
	<b>CG1</b>	<b>13.10</b>	<b>2.50</b>
	<b>EG2</b>	<b>16.80</b>	<b>2.30</b>
	<b>CG2</b>	<b>13.00</b>	<b>2.40</b>
<b>Coherence</b>	<b>EG1</b>	<b>16.50</b>	<b>2.10</b>
	<b>CG1</b>	<b>13.30</b>	<b>2.30</b>
	<b>EG2</b>	<b>16.40</b>	<b>2.40</b>
	<b>CG2</b>	<b>13.20</b>	<b>2.20</b>
<b>Conventions</b>	<b>EG1</b>	<b>16.80</b>	<b>2.30</b>
	<b>CG1</b>	<b>13.40</b>	<b>2.10</b>
	<b>EG2</b>	<b>16.70</b>	<b>2.40</b>
	<b>CG2</b>	<b>13.50</b>	<b>2.20</b>
<b>Creativity</b>	<b>EG1</b>	<b>18.25</b>	<b>2.40</b>
	<b>CG1</b>	<b>15.00</b>	<b>2.10</b>

<b>EG2</b>	<b>18.00</b>	<b>2.30</b>
<b>CG2</b>	<b>14.80</b>	<b>2.40</b>

**Note:** EG1= Experimental Group 1, CG1= Control Group 1, EG2= Experimental Group 2, CG2= Control Group 2. STD= Standard Deviation

The results demonstrate that the groups that received the DST treatment (EG1 and EG2) consistently outperformed the control groups across all the five narrative writing performance criteria. These differences are notable in the “Creativity” and “Language Use” criteria. However these results are not precise. Therefore, inferential statistics results are presented in the tables below for each narrative writing criteria for more clarity and evidence. Table 6 below displays the results for each criterion.

**Table 7**  
*Results Of The Two-way ANOVA For Interaction Effect in terms of "Organization".*

**Tests of Between-Subjects Effects**

Source	Type III Sumof Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	17.070 <sup>a</sup>	3	5.690	6.528	.000	.169
Intercept	462.250	1	462.250	530.306	.000	.847
Pretest	1.690	1	1.690	1.939	.167	.020
Treatment	13.690	1	13.690	15.706	.000	.141
<b>Pretest * treatment</b>	1.690	<b>1</b>	1.690	<b>1.939</b>	<b>.167</b>	<b>.020</b>
Error	83.680	<b>96</b>	.872			
Total	563.000	100				
Corrected Total	100.750	99				

a. R Squared = .169 (Adjusted R Squared = .143)

The results of the two-way ANOVA analysis for the Organization variable indicated that there was no significant main affect for pretest with  $F(1, 96) = 1.939, p = .167, \text{partial } \eta^2 = .020$ , a significant main effect for treatment (DST) with  $F(1, 96) = 15.706, p = .000, \text{partial } \eta^2 = .141$ . and no significant interaction between the pretest and treatment condition with  $F(1,96)= 1.939, P= .167, \text{Partial } \eta^2 = .020$ . This indicates that the impact of the digital storytelling intervention on Organization was not influenced by whether students underwent a pretest or not.

**Table 8**

*Results Of The Two-way ANOVA For Interaction Effect in terms of "Language Use".*

<b>Tests of Between-Subjects Effects</b>						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	14.960 <sup>a</sup>	3	4.987	8.736	.000	.214
Intercept	718.240	1	718.240	1258.231	.000	.929
Pretest	.160	1	.160	.280	.598	.003
Treatment	14.440	1	14.440	25.296	.000	.209
<b>Pretest * treatment</b>	.360	<b>1</b>	.360	<b>.631</b>	<b>.429</b>	<b>.007</b>
Error	54.800	<b>96</b>	.571			
Total	788.000	100				
Corrected Total	69.760	99				

a. R Squared = .214 (Adjusted R Squared = .190)

The analysis for "Language Use" indicated that there was no significant main affect for pretest  $F(1, 96) = .280, p = .598, \text{partial } \eta^2 = .003$ , a significant main effect for treatment (DST) with  $F(1, 96) = 25.296, p = .000, \text{partial } \eta^2 = .209$ . Further demonstrating that there was no significant interaction between the pretest and treatment with  $F(1,96)= .631, P= .429, \text{Partial } \eta^2= .007$ , which suggests that pretest sensitization had no significant impact on the effectiveness of the digital storytelling intervention in improving Language Use.

**Table 9**

*Results Of The Two-way ANOVA For Interaction Effect in terms of "Coherence".*

**Tests of Between-Subjects Effects**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	12.350 <sup>a</sup>	3	4.117	4.741	.004	.129
Intercept	515.290	1	515.290	593.424	.000	.861
Pretest	2.250	1	2.250	2.591	.111	.026
Treatment	8.410	1	8.410	9.685	.002	.092
<b>Pretest * treatment</b>	1.690	<b>1</b>	1.690	<b>1.946</b>	<b>.166</b>	<b>.020</b>
Error	83.360	<b>96</b>	.868			
Total	611.000	100				
Corrected Total	95.710	99				

a. R Squared = .129 (Adjusted R Squared = .102)

The findings of the two-way ANOVA analysis for Coherence indicated that there was no significant main affect for pretest  $F(1, 96) = 2.591, p = .111, \text{partial } \eta^2 = .020$ , a significant main effect for treatment (DST) with  $F(1, 96) = 9.685, p = .002, \text{partial } \eta^2 = .092$ . and no significant interaction effect, with  $F(1,96)= 1.946, P= 166, \text{Partial } \eta^2 = .020$ . These result indicates that the treatment had a consistent impact on Coherence, regardless of whether a pretest was conducted.

**Table 10**

*Results Of The Two-way ANOVA For Interaction Effect in terms of "Conventions".*

**Tests of Between-Subjects Effects**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	35.120 <sup>a</sup>	3	11.707	11.035	.000	.256
Intercept	635.040	1	635.040	598.624	.000	.862
Pretest	4.840	1	4.840	4.562	.035	.045
Treatment	27.040	1	27.040	25.489	.000	.210
<b>Pretest * treatment</b>	3.240	<b>1</b>	3.240	<b>3.054</b>	<b>.084</b>	<b>.031</b>
Error	101.840	<b>96</b>	1.061			
Total	772.000	100				
Corrected Total	136.960	99				

a. R Squared = .256 (Adjusted R Squared = .233)

The two-way ANOVA analysis for Conventions revealed a significant main affect

for pretest  $F(1, 96) = 4.562, p = .035$ , but with a less partial  $\eta^2 = .045$ , compared to the treatment effect that was indicated as significant with  $F(1, 96) = 25.489, p = .000$ , partial  $\eta^2 = .210$ . And no interaction effect was recorded as  $F(1,96)= 3.054, P= .084$ , Partial  $\eta^2 = .031$ . This indicates that the impact of the digital storytelling intervention on Conventions was not affected by whether the pretest was given.

**Table 11**

*Results Of The Two-way ANOVA For Interaction Effect in terms of "Creativity"*

<b>Tests of Between-Subjects Effects</b>						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5.960 <sup>a</sup>	3	1.987	2.805	.044	.081
Intercept	96.040	1	96.040	135.586	.000	.585
Pretest	1.960	1	1.960	2.767	.099	.028
Treatment	2.560	1	2.560	3.614	.060	.036
Pretest * treatment	1.440	1	1.440	<b>2.033</b>	<b>.157</b>	<b>.021</b>
Error	68.000	96	.708			
Total	170.000	100				
Corrected Total	73.960	99				

a. R Squared = .081 (Adjusted R Squared = .052)

**Finally**, The two-way ANOVA results for Creativity did not reveal a significant interaction main affect for pretest  $F(1, 96) = 2.767, p = .099$ , partial  $\eta^2 = .028$ , compared to the treatment effect that was indicated as significant with  $F(1, 96) = 3.614, p = .060$ , partial  $\eta^2 = .036$ . And there was no significant interaction between the pretest and the treatment, as evidenced by the  $F(1,96)= 2.033, P= .157$ , Partial  $\eta^2 = .021$  which suggests that the impact of digital storytelling on creativity was the same for all students, regardless of whether they took a pretest or not.

According to the results shown above, there were no statistically significant interaction effects seen between pretest and treatment for any of the narrative writing performance criteria ( $p > .05$ ). The results indicate that there was no pretest sensitization observed in this study, indicating that the students' performance on the pretest did not have a significant impact on their response to the treatment of Digital Storytelling.

#### 4.1.2 Main Effect of The Treatment

Following the investigation of the interaction effect between the pretest and the treatment, the following procedure involved examining the main impact of the treatment across the experimental and control groups. The Group differences (Experimental Vs Control) across all the five narrative writing performance criteria were investigated using a series of 2x2 ANOVA with pairwise comparisons. However, Even though the ANOVA tests may provide multiple group analysis of statistical differences, it is still statistically vague which groups differ the most. Therefore, a Post Hoc test must be conducted to distinguish the exact groups that differ.

A post hoc test is employed merely after the identification of a statistically significant outcome, in order to determine the precise origins of the observed differences. The term "post hoc" is derived from the Latin phrase meaning "after the event". (Foster et al, 2018.P.163) The attention of the current case will be directed solely towards the most frequently used option and the most suitable for the nature of the current data.

After calculating the number of pairs comparisons which is presented in the formula bellow mentioned by Elzaghali (2020):

$$\frac{K(k-1)}{2} = \frac{4(4-1)}{2} = 6$$

$K$  represents the number of groups in this study and the outcome which is 6 represents the number of necessary pairwise comparisons that will be conducted to extract the origins of the statistical difference found in the ANOVA test, SPSS automatically conducts these necessary pairwise comparisons that will be presented in the tables below.

A pairwise comparison between the four groups is conducted depending on the nature of this study's design. Every pair of groups undergoes Tukey's post hoc testing automatically in SPSS along with adjusting the p-value while doing multiple tests to avoid type I error (Foster et al. 2018, P 157).

The results are provided sequentially, with each criterion being addressed individually

**Table 12**

*Results of 2x2 Anova for Group Effects (Experimental Vs Control) in Terms of "Organization".*

<b>Tests of Between-Subjects Effects</b>							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	17.070	3	5.690	6.528	.000	.169	.966
Intercept	462.250	1	462.250	530.306	.000	.847	1.000
<b>Group</b>	<b>17.070</b>	<b>3</b>	<b>5.690</b>	<b>6.528</b>	<b>.000</b>	<b>.169</b>	<b>.966</b>
Error	83.680	96	.872				
<b>Total</b>		100					
	563.000	0					

a. R Squared = .169 (Adjusted R Squared = .143)

b. Computed using alpha = .05

A 2x2 ANOVA was used to analyze the impact of the treatment on the variable "Organization" in both the experimental and control groups. The results revealed a significant main impact of the treatment, with a statistical value of  $F(3, 96) = 6.528$ ,  $p = .000$ , and a partial eta squared value of **.169**. This indicates that approximately **16.9%** of the variance in Organization scores may be attributed to group participation. The recorded power of **.966** indicates a strong level of confidence in detecting a true effect.

### 4.1.2 .1 Pairwise Comparisons Between Groups (Experimental Vs Control)

Post hoc analyses using pairwise comparisons were conducted to analyze the differences between the experimental Groups (EG1 and EG2) and the control Groups (CG1 and CG2).

**Table 13**

*Results of the Pairwise Comparisons for Group Effects ( Experimental Vs Control) in Terms of “Organization”*

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
<b>EG1</b>	CG1	.480	.264	.072	-.044	1.004
	EG2	.000	.264	1.000	-.524	.524
	<b>CG2</b>	1.000*	.264	<b>.000</b>	.476	1.524
	EG2	-.480	.264	.072	-1.004	.044
	CG2	.520	.264	.052	-.004	1.044
<b>EG2</b>	EG1	.000	.264	1.000	-.524	.524
	CG1	.480	.264	.072	-.044	1.004
	<b>CG2</b>	1.000*	.264	<b>.000</b>	.476	1.524
<b>CG2</b>	<b>EG1</b>	-1.000*	.264	<b>.000</b>	-1.524	-.476
	CG1	-.520	.264	.052	-1.044	.004
	<b>EG2</b>	-1.000*	.264	<b>.000</b>	-1.524	-.476

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

The results from the pairwise comparisons showed that there was no significant difference between EG1 and CG1 in terms of “organization”, with a mean difference of 0.480 and a p-value of .072. Nevertheless, the students in CG2 achieved notably higher scores compared to both EG1 and EG2, with mean differences of 1.000,  $p = .000$  for EG1 and -1.000,  $p = .000$  for EG2. Although the treatment (DST) demonstrated a significant main impact, certain pairwise comparisons did not achieve statistical significance, notably when comparing the experimental groups to CG1.

**Table 14**

*Results of 2x2 Anova for Group Effects ( Experimental Vs Control) in Terms of “Language Use”.*

<b>Tests of Between-Subjects Effects</b>							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Square	Observed Power <sup>b</sup>
Corrected Model	14.960 <sup>a</sup>	3	4.987	8.736	.000	.214	.99
Intercept	718.240	1	718.240	1258.231	.000	.929	1.000
<b>Group</b>	<b>14.960</b>	<b>3</b>	<b>4.987</b>	<b>8.736</b>	<b>.000</b>	<b>.214</b>	<b>.994</b>
Error	54.800	96	.571				
Total	788.000	100					
Corrected Total	69.760	99					

a. R Squared = .214 (Adjusted R Squared = .190)

b. Computed using alpha = .05

A significant main effect was found for "Language Use" ( $F(3, 96) = 8.736$ ,  $p = .000$ , partial eta squared = .214), indicating that 21.4% of the variance may be explained by differences between groups. The observed power was .994, further confirming the strength and reliability of the reported effect.

**Table 15**

*Results of the Pairwise Comparisons for Group Effects ( Experimental Vs Control) in Terms of “Language Use”.*

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
<b>EG1</b>	<b>CG1</b>	.640*	.214	<b>.003</b>	.216	1.064
	EG2	-.040	.214	.852	-.464	.384
	<b>CG2</b>	.840*	.214	<b>.000</b>	.416	1.264
<b>CG1</b>	<b>EG1</b>	-.640*	.214	<b>.003</b>	-	-.216
	<b>EG2</b>	-.680*	.214	<b>.002</b>	-	-.256
	CG2	.200	.214	.352	-.224	.624
<b>EG2</b>	EG1	.040	.214	.852	-.384	.464
	<b>CG1</b>	.680*	.214	<b>.002</b>	.256	1.104
	<b>CG2</b>	.880*	.214	<b>.000</b>	.456	1.304
<b>CG2</b>	<b>EG1</b>	-.840*	.214	<b>.000</b>	-	-.416
	CG1	-.200	.214	.352	-.624	.224
	<b>EG2</b>	-.880*	.214	<b>.000</b>	-	-.456

Based on estimated marginal means

\*. The mean difference is significant at the .05 level

Pairwise comparisons revealed that Experimental Group 1 (EG1) exhibited superior performance compared to Control Group 1 (CG1), with a statistically significant mean difference of 0.640 ( $p = .003$ ). Furthermore, EG1 demonstrated higher performance compared to CG2, with a significant mean difference of 0.840 ( $p = .000$ ). In contrast, EG2 showed no significant change compared to EG1, with a mean difference of -0.040 and a p-value of .852. In addition, EG2 exhibited superior performance compared to CG1 and CG2, with mean differences of 0.680 ( $p = .002$ ) and 0.880 ( $p = .000$ ) respectively.

The results indicate that the treatment had a significant and positive impact on Language Use, especially for the experimental groups in comparison to the control groups.

**Table 16**  
*Results of 2x2 Anova for Group Effects ( Experimental Vs Control) in Terms of “Coherence”.*

<b>Tests of Between-Subjects Effects</b>							
Source	Type III Sum Sum of Squares	df	Mean Mean Square	F	Si g.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	12.350 <sup>a</sup>	3	4.117	4.741	.004	.129	.888
Intercept	515.290	1	515.290	593.424	.000	.861	1.000
<b>Group</b>	12.350	<b>3</b>	4.117	<b>4.741</b>	<b>.004</b>	<b>.129</b>	<b>.888</b>
Error	83.360	<b>96</b>	.868				
Total	611.000	100					
Corrected Total	95.710	99					

a. R Squared = .129 (Adjusted R Squared = .102)

b. Computed using alpha = .05

The results of the 2x2 ANOVA analysis for "Coherence" showed a significant main effect of the treatment, with  $F(3, 96) = 4.741$ ,  $p = .004$ , and a partial eta squared value of .129, indicating that the treatment explains 12.9% of the variance in Coherence scores. The recorded power was .888, indicating a moderate possibility of identifying a genuine effect.

**Table 17**  
*Results of the Pairwise Comparisons for Group Effects ( Experimental Vs Control) in Terms of “Coherence”.*

(I) group	(J) group	Mean Differen ce(I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lo wer Bou nd	Upp er Bou nd
<b>EG1</b>	CG1	.320	.264	.228	-.203	.843
	<b>EG2</b>	-.560*	.264	<b>.036</b>	-1.083	-.037
	CG2	.280	.264	.291	-.243	.803
<b>CG1</b>	EG1	-.320	.264	.228	-.843	.203
	<b>EG2</b>	-.880*	.264	<b>.001</b>	-1.403	-.357
	CG2	-.040	.264	.880	-.563	.483
<b>EG2</b>	<b>EG1</b>	.560*	.264	<b>.036</b>	.037	1.083
	<b>CG1</b>	.880*	.264	<b>.001</b>	.357	1.403
	<b>CG2</b>	.840*	.264	<b>.002</b>	.317	1.363
<b>CG2</b>	EG1	-.280	.264	.291	-.803	.243
	CG1	.040	.264	.880	-.483	.563
	<b>EG2</b>	-.840*	.264	<b>.002</b>	-1.363	-.317

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Pairwise comparisons revealed significant differences between EG2 and both Control Group 1 (CG1) as well as Control Group 2 (CG2). EG2 demonstrated superior performance compared to CG1, with a mean difference of 0.880 and a significance level of  $p = .001$ . Additionally, EG2 outperformed CG2 with a mean difference of 0.840 and a significance level of  $p = .002$ . In addition, EG2 had superior performance in comparison to EG1 (with a mean difference of 0.560 and a p-value of .036), indicating that the treatment had a more significant effect on Coherence for this particular group.

To summarize, the treatment had a notable and significant impact on Coherence, with stronger results found in EG2.

### Table 18

*Results of 2x2 Anova for Group Effects (Experimental Vs Control) in Terms of "Conventions".*

**Tests of Between-Subjects Effects**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	35.120 <sup>a</sup>	3	11.707	11.035	.000	.256	.999
Intercept	635.040	1	635.040	598.624	.000	.862	1.000
Group	35.120	<b>3</b>	11.707	<b>11.035</b>	<b>.000</b>	<b>.256</b>	<b>.999</b>
Error	101.840	<b>96</b>	1.061				
Total	772.000	100					
Corrected Total	136.960	99					

a. R Squared = .256 (Adjusted R Squared = .233)

b. Computed using alpha = .05

The ANOVA analysis revealed a highly significant main effect of the treatment on "Conventions" ( $F(3, 96) = 11.035, p = .000$ , partial eta squared = .256), indicating that group membership explains 25.6% of the variation in "Conventions". The measured power was .999, indicating an extremely high probability of finding a genuine effect.

**Table 19**

*Results of the Pairwise Comparisons for Group Effects ( Experimental Vs Control) in Terms of "Conventions".*

(I) group	(J) group	Mean Differen ce(I-J)	St d. Err or	Sig. b	95% Confidence Interval for Difference <sup>b</sup>	
					Lo wer Bou nd	Upp er Bou nd
<b>EG1</b>	<b>CG1</b>	1.400*	.291	<b>.000</b>	.822	1.978
	<b>EG2</b>	.800*	.291	<b>.007</b>	.222	1.378
	<b>CG2</b>	1.480*	.291	<b>.000</b>	.902	2.058
<b>CG1</b>	<b>EG1</b>	-1.400*	.291	<b>.000</b>	-1.978	-.822
	<b>EG2</b>	-.600*	.291	<b>.042</b>	-1.178	-.022
	<b>CG2</b>	.080	.291	.784	-.498	.658
<b>EG2</b>	<b>EG1</b>	-.800*	.291	<b>.007</b>	-1.378	-.222
	<b>CG1</b>	.600*	.291	<b>.042</b>	.022	1.178
	<b>CG2</b>	.680*	.291	<b>.022</b>	.102	1.258
<b>CG2</b>	<b>EG1</b>	-1.480*	.291	<b>.000</b>	-2.058	-.902
	<b>CG1</b>	-.080	.291	.784	-.658	.498
	<b>EG2</b>	-.680*	.291	<b>.022</b>	-1.258	-.102

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

Pairwise comparisons revealed that EG1 demonstrated higher performance compared to CG1 (mean difference = 1.400,  $p = .000$ ), EG2 with a mean difference = 0.800,  $p = .007$ , and CG2 with a mean difference of 1.480,  $p = .000$ ). Similarly, the performance of EG2 was considerably superior to that of CG1 (mean difference = 0.600,  $p = .042$ ) and CG2 with a mean difference = 0.680,  $p = .022$ ).

In general, the treatment had a strong and statistically significant positive effect on Conventions, as both experimental groups performed better than the control groups.

### Table 20

*Results of 2x2 Anova for Group Effects (Experimental Vs Control) in*

*Terms of "Creativity".*

**Tests of Between-Subjects Effects**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	5.960 <sup>a</sup>	3	1.987	2.805	.044	.081	.659
Intercept	96.040	1	96.040	135.586	.000	.585	1.000
<b>Group</b>	5.960	<b>3</b>	1.987	<b>2.805</b>	<b>.044</b>	<b>.081</b>	<b>.659</b>
Error	68.000	<b>96</b>	.708				
Total	170.000	100					
Corrected Total	73.960	99					

a. R Squared = .081 (Adjusted R Squared = .052)

b. Computed using alpha = .05

The analysis for "Creativity" revealed a notable main impact of Digital Storytelling, with a significant F-value of 2.805 (df = 3, 96),  $p = .044$ , and a partial eta squared value of .081 suggesting that 8.1% of the variability in Creativity scores may be attributable to the treatment. Nevertheless, the observed power had a lower value of .659, indicating a less strong influence.

**Table 21**

*Results of the Pairwise Comparisons for Group Effects ( Experimental Vs Control) in Terms of "Creativity".*

(I) group	(J) group	Mean Differen ce(I-J)	St d. Err or	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lo wer Bou nd	Upp er Bou nd
<b>EG1</b>	<b>CG1</b>	.560*	.238	<b>.021</b>	.087	1.033
	<b>EG2</b>	.520*	.238	<b>.031</b>	.047	.993
	<b>CG2</b>	.600*	.238	<b>.013</b>	.127	1.073
<b>CG1</b>	<b>EG1</b>	-.560*	.238	<b>.021</b>	-1.033	-.087
	EG2	-.040	.238	.867	-.513	.433
	CG2	.040	.238	.867	-.433	.513
<b>EG2</b>	<b>EG1</b>	-.520*	.238	<b>.031</b>	-.993	-.047
	CG1	.040	.238	.867	-.433	.513
	CG2	.080	.238	.738	-.393	.553
<b>CG2</b>	<b>EG1</b>	-.600*	.238	<b>.013</b>	-1.073	-.127
	CG1	-.040	.238	.867	-.513	.433
	EG2	-.080	.238	.738	-.553	.393

Based on estimated marginal means.

The mean difference is significant at the .05 level

Pairwise Comparisons: Statistically significant differences were observed between EG1 and both CG1 and CG2. EG1 had greater performance compared to CG1 (mean difference = 0.560,  $p = .021$ ) and CG2 (mean difference = 0.600,  $p = .013$ ). In addition to EG2 that outperformed CG1 with a mean difference of 0.520 and a  $p$ -value of .031. However, there was no statistically significant difference between EG2 and CG2. The findings indicate that the treatment had a moderate but meaningful effect on Creativity, with more pronounced enhancements observed in the experimental groups as compared to the control groups.

To summarize, the 2x2 ANOVAs revealed substantial main effects of the treatment on all five narrative writing criteria: Organization, Language Use, Coherence, Conventions, and Creativity. The experimental groups regularly achieved better results than the control groups, especially in the areas of Language Use, Conventions, and Creativity, where the impacts were greatest. The data suggest that the treatment had a significant and beneficial effect on the participants' narrative writing performance, providing evidence for the effectiveness of the intervention (DST) in enhancing important narrative writing skills. In overall, the findings indicate that using digital storytelling in narrative writing courses greatly improved students' narrative writing performance.

### 4.1.3 Analysis Of Covariance (ANCOVA) For Posttest Scores With The Pretest As a Covariate.

After the previous 2x2 ANOVA tests that were conducted to investigate the interaction effect and the treatment effect, it was necessary to conduct further analysis of covariance ANCOVA to adjust for any pretest differences and further investigates the treatment effect. The results of the ANCOVA for each criterion are presented in tables below.

**Table 22**

*Results Of ANCOVA For “Organization” Posttest Scores With Pretest Scores As A Covariate*

<b>Tests of Between-Subjects Effects</b>							
<u>Dependent Variable: Organization</u>							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	5.287 <sup>a</sup>	2	2.643	4.315	.019	.155	.723
Intercept	26.027	1	26.027	42.484	.000	.475	1.000
<b>preOrganization Group</b>	2.407	<b>1</b>	2.407	<b>3.928</b>	<b>.053</b>	<b>.077</b>	<b>.493</b>
	3.615	1	3.615	<b>5.901</b>	<b>.019</b>	<b>.112</b>	<b>.663</b>
Error	28.793	<b>47</b>	.613				
Total	294.000	50					
Corrected Total	34.080	49					

a. R Squared = .155 (Adjusted R Squared = .119)

d. Computed using alpha = .05

The analysis of covariance (ANCOVA) for Organization, using pretest Organization scores as a covariate, showed a statistically significant main effect of group. After accounting for pretest scores, the results showed a significant difference between the experimental and control groups, as revealed by the statistical analysis ( $F(1, 47) = 5.901$ ,  $p = .019$ , partial  $\eta^2 = .112$ ). The observed power was .663. This indicates that the

treatment (DST) had a significant influence on students' performance in terms of organizing their narrative writing. The covariate, pretest Organization scores, showed a pattern towards statistical significance, with  $F(1, 47) = 3.928$ ,  $p = .053$ , suggesting that prior knowledge may have influenced posttest performance, although it did not reach a significant level.

Overall, the findings indicate that the intervention had a significant beneficial effect on students' capacity to structure their narrative writing in comparison to the control groups, while taking into consideration initial differences in Organization skills.

**Table 23**

*Results Of ANCOVA For “Language Use” Posttest Scores With Pretest Scores As A Covariate.*

**Tests of Between-Subjects Effects**

Dependent Variable: LanguageUse

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	5.891 <sup>a</sup>	2	2.946	6.858	.002	.226	.905
Intercept	29.768	1	29.768	69.301	.000	.596	1.000
<b>PreLanguageUse</b>	.771	<b>1</b>	.771	<b>1.796</b>	<b>.187</b>	<b>.037</b>	<b>.259</b>
Group	4.480	1	4.480	<b>10.429</b>	<b>.002</b>	<b>.182</b>	<b>.885</b>
Error	20.189	<b>47</b>	.430				
Total	396.000	50					
Corrected Total	26.080	49					

a. R Squared = .226 (Adjusted R Squared = .193) Computed using alpha = .05

The ANCOVA analysis revealed a significant main impact of group on Language Use, even after adjusting for pretest scores ( $F(1, 47) = 10.429$ ,  $p = .002$ , partial  $\eta^2 = .182$ ). The observed power was .885. This result suggests that the experimental group had a considerably higher level of performance compared to the control group in Language Use posttest scores. Nevertheless, the covariate, pretest scores for Language Use, did not yield significant results, with an F-value of 1.796 and a p-value of .187. This indicates that the pre-existing Language Use skills did not have a significant impact on the posttest outcomes. The results indicate that the treatment was successful

in enhancing students' linguistic competency in narrative writing, regardless of their baseline level of competency in that area.

**Table 24**

*Results Of ANCOVA For "Coherence" Posttest Scores With Pretest Scores As A Covariate*

<b>Tests of Between-Subjects Effects</b>							
<b>Dependent Variable: Coherence</b>							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	1.525 <sup>a</sup>	2	.762	.901	.413	.037	.196
Intercept	33.499	1	33.499	39.603	.000	.457	1.000
<b>preCoherence</b>	.245	<b>1</b>	.245	<b>.289</b>	<b>.593</b>	<b>.006</b>	<b>.082</b>
Group	1.223	1	1.223	1.446	.235	.030	.218
Error	39.755	<b>47</b>	.846				
Total	266.000	50					
Corrected Total	41.280	49					

a. R Squared = .037 (Adjusted R Squared = -.004)  
 Computed using alpha = .05

The analysis of covariance (ANCOVA) conducted for the variable "Coherence" did not reveal a statistically significant main impact of the group, even after taking into account the pretest scores. The F-value was 1.446, with degrees of freedom (1, 47), resulting in a p-value of .235. The effect size, as measured by partial eta squared ( $\eta^2$ ), was .030. The observed power of the study was .218. This suggests that there was no statistically significant difference in Coherence ratings between the experimental and control groups. In addition, the covariate, pretest Coherence, was found to be statistically insignificant, with  $F(1, 47) = .289$ ,  $p = .593$ . This suggests that prior coherence skills did not have a significant impact on posttest performance. These findings indicate that the treatment did not result in significant enhancements in the Coherence criterion for narrative writing.

**Table 25**

*Results of ANCOVA For “Conventions” Posttest Scores With Pretest Scores As A Covariate*

<b>Tests of Between-Subjects Effects</b>							
<b>Dependent Variable: Conventions</b>							
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	29.334 <sup>a</sup>	2	14.667	17.112	.000	.421	1.000
Intercept	43.860	1	43.860	51.170	.000	.521	1.000
<b>preConventions</b>	4.834	<b>1</b>	4.834	<b>5.640</b>	<b>.022</b>	<b>.107</b>	<b>.643</b>
Group	18.290	1	18.290	21.339	.000	.312	.995
Error	40.286	<b>47</b>	.857				
Total	445.000	50					
Corrected Total	69.620	49					

a. R Squared = .421 (Adjusted R Squared = .397)

b. Computed using alpha = .05

The analysis of covariance (ANCOVA) for Conventions showed a significant main effect of group, even after accounting for pretest scores ( $F(1, 47) = 21.339$ ,  $p = .000$ , partial  $\eta^2 = .312$ ). The observed power was .995. The data suggests that the experimental group scored better than the control group in the Conventions criterion. In addition, the covariate, pretest Conventions, showed a significant effect. The  $F(1, 47)$  value was 5.640, with a p-value of .022 and a partial  $\eta^2$  value of .107. The observed power was .643. This indicates that the level of proficiency in Conventions in the initial phase had a significant effect on the results in the posttest. In summary, the results suggest that the intervention significantly improved students' proficiency in writing norms, especially when considering their existing expertise in this domain.

**Table 26**

*Results Of ANCOVA For “Creativity” Posttest Scores With Pretest Scores As A Covariate.*

Tests of Between-Subjects Effects							
Dependent Variable: Creativity							
Source	Type III Sum of Square	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	4.227 <sup>a</sup>	2	2.114	2.420	.10	.093	.464
Intercept	23.523	1	23.523	26.931	.000	.364	.999
<b>PreCreativity</b>	.307	<b>1</b>	.307	<b>.352</b>	<b>.556</b>	<b>.007</b>	<b>.089</b>
Group	4.156	1	4.156	4.758	.034	.092	.570
Error	41.053	47	.873				
Total	108.000	50					
Corrected Total	45.280	49					

a.R Squared = .093 (Adjusted R Squared = .055)

b.Computed using alpha = .05

The analysis of covariance (ANCOVA) conducted on the Creativity results showed a statistically significant main impact of group, even after accounting for pretest scores ( $F(1, 47) = 4.758, p = .034, \text{partial } \eta^2 = .092$ ). The observed power for this effect was .570. These findings indicate that the treatment group had a considerably higher level of creativity in narrative writing compared to the control group. Nevertheless, the covariate, pretest creativity scores, did not yield significant results.

The F-statistic (1, 47) was .352, with a p-value of .556. This suggests that the initial creativity scores did not have a significant impact on the outcomes of the posttest. The findings indicate that the intervention resulted in slight enhancements in students' creativity, whereas the impact of pre-existing creativity performance was negligible.

To summarize, the ANCOVA findings indicate that the treatment had a notable and positive impact on four out of the five criteria: Organization, Language Use, Conventions, and Creativity. However, no significant effects were observed for Coherence. This suggests that the intervention was especially successful in enhancing specific important elements of narrative writing, particularly in terms of structure, language skills, adherence to conventions, and creative expression.

#### **4.1.4 An Independent Sample T test For EG2 and CG2.**

This independent sample t-test will yield further evidence regarding whether the experimental group exhibited higher performance than the control group in the evaluated narrative writing criteria following the intervention, further strengthening the study's hypothesis that digital storytelling had a beneficial effect on students' narrative writing performance. Results are displayed in table 24 below.

#### **Table 27**

*Results of the Independent Sample t test for EG2 and CG2*

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
<b>Organization</b>	Equal variances assumed	3.381	48	<b>.002</b>	1.00000	.29575	.40393	1.59607
<b>LanguageUse</b>	Equal variances assumed	3.705	48	<b>.001</b>	.88000	.23749	.40250	1.35750
<b>Coherence</b>	Equal variances assumed	3.125	48	<b>.003</b>	.84000	.26882	.29949	1.38051
<b>Conventions</b>	Equal variances assumed	2.212	48	<b>.032</b>	.68000	.30746	.06180	1.29820
<b>Creativity</b>	Equal variances assumed	.380	48	.706	.08000	.21071	-.34367	.50367

The independent sample t test results indicate that there is a significant difference in “organization” posttest scores between EG2 and CG2,  $t(48) = 3.381$ ,  $p = .002$  with a mean difference of 1.00000. suggesting that the intervention (DST) had a notable impact on students’ ability to well organize and structure their narratives. A significant difference was also found between the groups in terms of “Language Use” where  $t(48) = 3.705$ ,  $p = .001$  with a mean difference of .88000. indicating that Digital storytelling had a significant impact on this aspect of students’ narrative writing performance.

Further differences were found between these groups in terms of “Coherence” where  $t(48) = 3.125$ ,  $p = .003$  and a mean difference of .84000, manifesting the effectiveness of Digital Storytelling in enhancing students’ coherence throughout the narratives. In addition, “Conventions” was another aspect of narrative writing performance that was improved by Digital Storytelling with  $t(48) = 2.212$ ,  $p = .032$  with a group mean difference of .68000. However, no significant group differences were recorded in terms of “Creativity”  $t(48) = .380$ ,  $P = .706$ . (mean difference = .08000) indicating that the intervention (DST did not significantly affect students’ creativity in their narrative compositions.

To summarize, the independent sample t test results largely compliment the later ANCOVA results that were concerned with exploring differences between EG1 and CG1 after controlling for the pretest scores further reinforcing the hypothesis that Digital Storytelling enhances students’ narrative writing performance particularly “organization”, “language use”, “Coherence”, and “conventions”. However, its effect on “creativity” remains inconclusive. These results demonstrate the efficacy of Digital Storytelling as a pedagogical tool in improving students’ narrative writing performance in an Algerian higher education context.

#### **4.1.5 Generalizability of the results**

The utilization of the Solomon Four-Group Design facilitated the replication of the treatment effect across multiple groups, hence augmenting the generalizability of the research outcomes. The consistent treatment effects reported in several comparisons (02 > 01, 02 > 04, 05 > 06, 05 > 03) suggest that the treatment impact of DST is strong and may be applied to similar educational settings.

#### **4.1.6 The process of maturation and the impact of historical events**

The analysis of CG2 (without pretest or treatment) in contrast to EG1 (with pretest and treatment) and EG2 (without pretest but with treatment) yielded valuable information regarding possible maturation and history effects. The results revealed no significant deviations that might be attributed to maturation or history. This indicates that the improvements in narrative writing skills can be attributed to the DST intervention rather than external factors or natural progression over time.

## 4.2. Research Question Two

### 2. Does The Integration of Digital Storytelling in Writing Classrooms Creates a Meaningful Learning Environment?"

Observations took place during the incorporation of Digital Storytelling (DST) into narrative writing sessions, namely at three sessions: "The preparation phase," "The production phase," and "The Presentation phase". Two observers used a Structured Classroom Observation Checklist (SCOC) to record observations for both Experimental Group 1 (EG1) and Experimental Group 2 (EG2). The following analysis presents the observed frequencies and percentages of several behavior classified under Active Learning, Collaborative Learning, Constructive Learning, Authentic Learning, and Classroom Management.

#### 4.2.1 Descriptive Analysis

##### 4.2.1.1 Session One (The Preparation Phase) Observation's results

###### **Observations' results of Experimental Group 1:**

**Active Learning:** Both observers recorded that students demonstrated a "Very Evident" level of engagement with multimedia components

**Collaborative Learning:** None of the students were very effective in using online platforms for peer feedback at this stage, but observers noted that students were effective in working collaboratively.

**Constructive Learning:** according to the observers, most of students shown proficiency in employing tools creatively, while some others displayed a basic comprehension of tools mastery beside story structure.

**Authentic Learning:** Observer two stressed that most of students' projects demonstrated genuine connections to real-world situations and their own personal encounters.

**Classroom Management:** both observers stated that some students demonstrated less time management skills, while most of them exhibited a high level of attentiveness.

###### **Observations' results of Experimental Group 2:**

**Active Learning:** both observers recorded that students were "highly engaged" with the multimedia components, while the others displayed an average level of engagement "especially those seated at the back" as observer 1 recorded.

**Collaborative Learning:** observer 1 noted that few students were not very "experienced" with using digital tools , while others were " very experienced" in exploiting online platforms for peer feedback.

**Constructive Learning:** observers agreed that the majority of the students exhibited a high level of creativity, while the other half shown a fundamental grasp of narrative structure.

**Authentic Learning:** both observers noted that Half of the students' projects were based on real-world situations, while the other half were connected to their personal experiences.

**Classroom Management:** both Observers also remarked that some of the students quietly managed their time, and the others demonstrated strong focus.

#### **4.2.1.2 Session Two (The production Phase) Observations' Results**

##### **Observations' results of Experimental Group 1:**

**Active Learning:** Observers noted that the majority of the students Very Engaged and interacting with multimedia activities.

**Collaborative Learning:** most students engaged in peer feedback and collaboration as both observers noted.

**Constructive Learning:** observer 2 mentioned that fewer students demonstrated creativity in their storyline while the majority has shown improvement in basic story structure.

**Authentic Learning:** based on observers notes students were engaged in authentic narrative writing tasks depicting personal experience connection.

**Classroom management:** both observers agreed that "most students effectively managed their time and maintained focus throughout the session".

##### **Observations' results of Experimental Group 2:**

**Active Learning:** both observers recorded very evident students' interaction with the

digital storytelling tasks and multimedia.

**Collaborative Learning:** Very evident collaboration among peers was recorded in this group.

**Constructive Learning:** observer 1 noted that the "The learning process was constructive when learners were trying to figure out how to organize their ideas logically and in accordance with the pictures used", while observer 2 underlined students' "good understanding of the narrative structure", demonstrating their construction of knowledge through experiencing.

**Authentic Learning:** as both observers highlighted, "most of the students reflected their personal experiences in their digital stories".

**Classroom Management:** Evident to very evident time management was recorded by both observers, with "minimal to no off-task behaviour"

#### **4.2.1.3 Session Three's (The presentation Phase) Observations Results.**

##### **Observations' results of Experimental Group 1:**

**Active Learning:** both observers noted students achieving the highest Engagement through the application of multimedia b recording "active participation and engagement" by Observer 1

**Collaborative Learning:** most observers remark highlighted peer involvement feedback.

**Constructive learning:** observers agreed that "the construction of knowledge during this phase manifested in the ability to use the video editing tools available to create outstanding narratives moving smoothly over obstacles" (observer 2).

**Authentic Learning:** "most of the stories were personal narratives that reflect on life events." Observer 2 claimed.

**Classroom Management:** Observer 2 highlighted that "although students effectively seemed to manage their time some others fail due to some quick technical issues Observer 2 also noted that "most students were engaged and attentive with minor noise and distraction but without hindering the learning"

##### **Observations' results of Experimental Group 1:**

**Active Learning:** both observers agreed that students were "actively participating" and "visually engaged" as observer 1 stressed.

**Collaborative Learning:** Observer 2 highlighted that "collaboration was key to overcome the obstacles faced during this presentation session" both observers agreed that "collaboration and continuous feedback from the teacher and peers played a great role in the quality of the final projects".

**Constructive Learning:** Constructive learning was manifested as "students constructed the knowledge how to effectively use the digital tools to create outstanding stories despite the obstacles faced" as observer 2 remarked.

**Authentic Learning:** " both observers agreed that the final projects of "students reflected the real world experience and current events covering themes such as loss and death during Covid 19".

**Classroom management:** fewer students were off-task basically those who were "presenting next" based on observer 2's notes and almost all others were quite managed and "attentive during this session, especially during the presentation of the digital stories phase" as observer 1 recorded.

### **Summary of Findings**

The observation sessions indicated that the implementation of Digital Storytelling (DST) in both experimental groups (EG1 and EG2) facilitated a meaningful learning atmosphere characterized by elevated levels of student involvement, cooperation, and productive learning.

**Active Learning:** Throughout all sessions, students consistently interacted with multimedia elements, with the highest levels of engagement occurring during the final production and presentation.

**Collaborative Learning:** Collaboration progressed during the sessions, as students increasingly depended on peer feedback and teamwork, particularly during the drafting and final production phases. This emphasizes the significance of social interaction in the realm of digital storytelling.

**Constructive Learning:** Students demonstrated progressive mastery in exploiting digital tools and comprehending narrative framework, leading to the creation of creative

and well organized digital narratives. The individual demonstrated problem-solving skills, specifically in successfully addressing technological obstacles.

**Authentic Learning:** Most of the digital stories were intricately intertwined with real-world contexts and personal experiences, thereby rendering the learning experience significant and relevant.

Regarding classroom management, the students demonstrated effective time management skills, with minimal occurrences of behavior that deviated from the task at hand. The last session exhibited the utmost levels of attentiveness, especially during the phase of presenting.

The findings suggest that Digital Storytelling improves students' ability to write narratives and fosters an immersive and genuine learning environment that promotes active involvement, cooperation, and originality. The thematic analysis provides additional evidence by demonstrating that students linked their digital stories to personal and real-life encounters, collaborated to overcome obstacles, and actively participated in reflective and constructive activities throughout the process.

## **4.2.2 Thematic analysis**

The thematic analysis sought to address this research inquiry: "Does the utilization of Digital Storytelling promote an effective and a meaningful learning environment?" The comments from observers in both groups were collected, sorted then thematically analyzed to identify emerging themes regarding the efficacy of DST to facilitate an invaluable educational experience.

### **4.2.2.1 Theme 1: Enhanced Involvement and Dynamic Participation**

Throughout both experimental groups, there was a recurring pattern of increased involvement and active participation in the DST process. Observers in EG1 reported that students were actively involved in the process of selecting images and discussing their ideas for storyboards. In contrast, observers in EG2 noted that students were particularly engaged in choosing appropriate audio and video clips for their multimedia projects. This theme was particularly apparent during the concluding production phase, where enthusiasm reached its highest point, with students eagerly anticipating the opportunity to

present their work.

#### **4.2.2.2 Theme 2: Improved Cooperation and Feedback from Peers.**

Both groups exhibited a consistent rise in their collaborative activities. In EG1, collaboration was powerful and prevalent, especially during the drafting phase, where students demonstrated effective teamwork and displayed strong collaboration in strategizing their narratives. In EG2, there was a noticeable increase in peer feedback, as students started to use online tools more frequently for collaboration and sharing of ideas. The shift towards online collaboration suggests that DST fostered a conducive learning environment where students were able to analyze and improve each other's work.

#### **4.2.2.3 Theme 3: Creativity and Problem-Solving**

The implementation DST fostered the development of innovative artistic and analytical skills among students. Observers in EG1 noted that during the prewriting phase, students were in the initial stages of their creative process, but by the final session, their creativity was clearly evident. They were employing advanced techniques such as flashbacks and strong narrative voices. In EG2, students demonstrated a tendency towards exploring different online tools and strategies, resulting in heightened creativity in their digital narratives.

#### **4.2.2.4 Theme 4: Authentic and relevant Activities**

Both groups consistently emphasized the importance of the learning experience being genuine and true to life. Students were able to establish a connection between their digital stories and personal experiences or current events, thus enhancing the relevance of their learning. As mentioned in EG1, "students established a connection between their narratives and real-life encounters, although a few were still in the process of refining their concepts." During the concluding sessions, these connections were further strengthened, as narratives showcased "profound associations with real-life encounters," enhancing the authenticity and profundity of the educational experience.

### **4.2.2.5 Theme 5: Efficient task focus in the classroom**

The integration of DST was found to have a positive impact on classroom management and engagement. Both in EG1 and EG2, students demonstrated effective time management skills and maintained a high level of focus, exhibiting minimal instances of off-task behavior. Observers in EG2 noted that there was some misuse of time management, "but overall, the students remained on track throughout the session."

In summary, the observational analysis of both experimental groups demonstrated that the implementation of Digital Storytelling effectively established a significant learning environment. The students exhibited a high level of engagement, effectively collaborated, demonstrated creativity, and applied their work to real-world contexts. Furthermore, there was an enhancement in classroom management, which played a significant role in fostering a conducive and efficient learning environment. The emerging themes indicate that DST is an effective instrument in promoting a vibrant and captivating educational experience that facilitates both personal originality and collaborative learning.

Nevertheless, there are certain aspects that might be enhanced, such as the ability to effectively manage time, use online platforms for receiving feedback from peers, and engage in self-reflection over one's work, but generally, the positive results confirm the potential of digital storytelling as a successful and meaningful teaching tool, while also highlights particular areas for enhancement to optimize its advantages in the classroom.

## **4.3 Research Question Three**

### **What are students' Attitudes Towards the Implementation of Digital Storytelling in Narrative Writing Classes**

#### **4.3.1 Results of The Students Pre-Survey**

Before the intervention a pre-survey was administered to both experimental groups to gather information about students' access and mastery of different digital tools available for them, prior knowledge and familiarity with DST and its tools and applications, and their overall attitudes towards the use of technology in writing sessions in a higher education level.

The following table displays the reliability test for the pre-survey excluding demographic questions such as age and gender.

**Table 28**

*Cronbach's Reliability Test of the students' Pre-intervention Survey.*

Groups	Cronbach's Alpha	N of Items
EG1	.821	6
EG2	.792	6

The value of coefficient alpha is higher than .70. Therefore, this pre-survey was considered reliable. Therefore, further descriptive statistics were conducted. The table below illustrates the results and some background information about the participants in both experimental groups.

**Table 29**

*Background Information of the Students In Experimental Groups 1 and 2.*

Groups	Gender				Age	
	Male		Female		18-24	
	F	P	F	P	F	P
EG1	8	32 %	17	68 %	25	100 %
EG2	6	24 %	19	76 %	25	100 %

*Note: EG1= Experimental group 1, EG2= Experimental group 2, F= Frequency,*

*P= Percentage.*

The participants that answered the survey are distributed as the table above shows, 32 % males and 68% females in experimental group 1. Whereas, 24% were males and 76% were females in experimental group 2 all ranging between the ages of 18 and 24 years old.

Participants in the experimental groups were asked four binary questions and an additional dichotomous question about their access and availability of digital devices,

their self-assessed mastery of these devices in addition to their familiarity with the term “Digital Storytelling” and video editing tools for the sake of evaluating students’ access and mastery of the digital tools available for them before the intervention takes place besides voting on the most preferred tool to be used for the study. Students’ responses were either yes or no. Figure bellow shows students’ access and ownership of the digital devices.

**Figure 4**

*Students in Experimental Group One’s Ownership and Access to Digital Devices in EG1.*

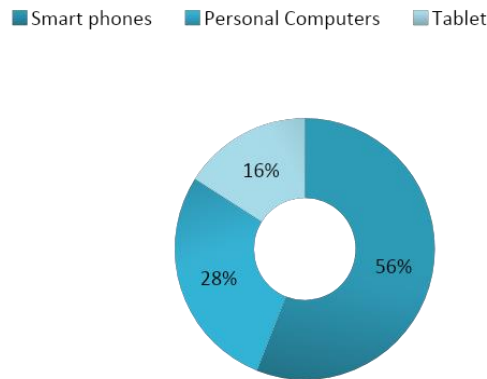
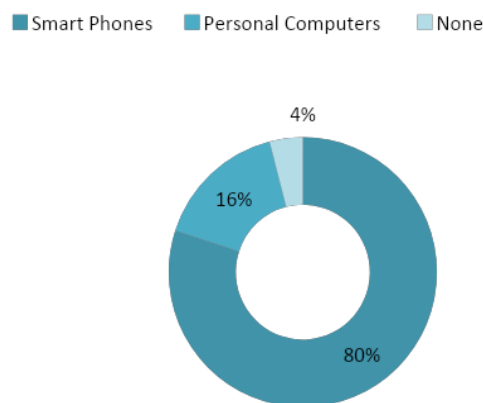


Figure 4 displayed students’ accessibility to digital devices such as Smart Phones, Personal Computers and tablets, the results show that the majority of the students in EG1 acquire or at least have access to Smart phones (56%) or even acquire both Personal computers and smart phones (28%) besides digital tablets (16%).

Students’ in experimental group two’s access to digital devices is illustrated in figure below.

**Figure 5**

*Students in Experimental group two’s Ownership and Access to Digital Devices in EG2.*



The results from Figure 5 above revealed that the greater part of the students in EG2 obtained and had access to Smart phones (80%) and 16% of them had personal computers and only 4% of the students in this group acquired none of the above mentioned digital devices with a recorded frequency of two students exactly.

Table 30 below shows the results of the binary questions 1, 2, 3, and 5 asked to record some background information on the mastery of digital devices, familiarity with DST and its tools and their overall attitude towards the incorporation of technology in writing classrooms in a higher education context. Students' responses are displayed in descriptive statistics while the dichotomous question 4 is illustrated in Figure that follows.

**Table 30**

*EG1 Students' Background Information*

	Q 1		Q 2		Q 3		Q5	
	Y	N	Y	N	Y	N	Y	N
<b>F</b>	19	6	8	17	17	8	14	11
<b>P</b>	76%	24%	32%	68%	68%	32%	56%	44%

*Note:*

*Q1= Do you master the use of digital devices such as smart phones and computers?*

*Q2= Are you familiar with the term Digital Storytelling (DST)?*

*Q3= Are you familiar with video editing tool, applications, or websites?*

*Q5= Do you believe that teachers had better use technology in writing modules?*

**Y=** Yes, **N=** No, **F=** Frequency, **P=** Percentage.

The results from table above show that most students of EG1 (76%) are capable of using digital devices such as smart phones and computers. based on students' self assessment. However, the majority (68%) of the students are unfamiliar with the term "Digital Storytelling (DST)" but responses to question 3 surprisingly flipped the coin in favour of the video editing tools indicating that students' were truly unfamiliar with the term DST itself rather than the process of Digital Storytelling which was obvious when

the 68% of the students in this group confessed their familiarity with video editing tools (Q3) which are in fact digital storytelling tools.

On the other hand, Q5 aimed at recording students' overall attitudes towards the integration of DST in writing modules and the results show that most students had a quite positive attitude towards it with a percentage of 56% whereas the rest 44% had a less positive attitude towards Technology integration in such modules all prior to the DST's intervention.

Figure 6 below illustrates answers to Q4 that documents students' most used and preferred video editing tools to be used in favour of the current study.

**Figure 6**

*Experimental Group one's Student's Most Used and Preferred Tools For Video Editing (Or DST).*

**Q4: What are the video editing applications or websites you prefer to use?**

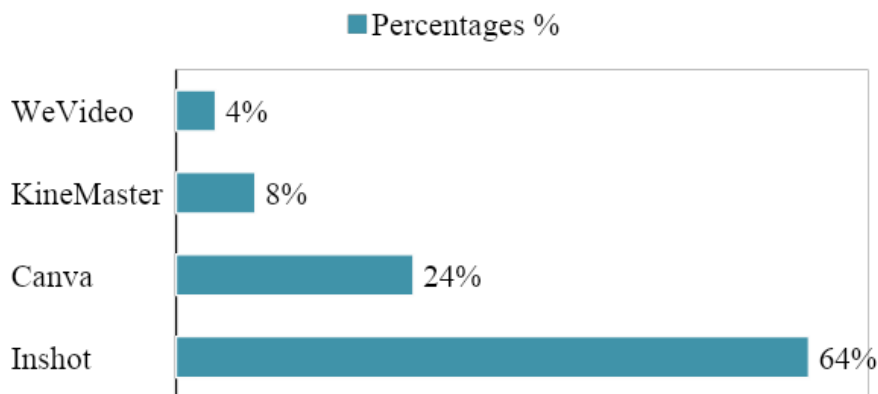


Figure 6 above illustrates the most used video editing applications and websites according to EG1's students. Starting from the application called Inshot that permits easier editing steps for both beginners and professionals its easy access and offline features allows it to be the most rated application with a percentage of 64%, next Canva which is available as an application and a website, its free access, advanced professional features, and endless multimedia resources granted by this tool makes it a second favoured tool for students in this group with a percentage of 24%. Next, KineMaster application with its free access and advanced professional features was fourthly rated by 8% of the students. Finally, a video editing application called WeVideo was stated by 4 % of the students in this group mostly for its free access and offline features.

**Table 31***EG2 Students' Background Information*

	Q1		Q2		Q3		Q5	
	Y	N	Y	N	Y	N	Y	N
<b>F</b>	14	11	8	17	19	6	15	10
<b>P</b>	56	44%	32	68	76	24%	60	40%
	%		%	%	%		%	

*Note:*

*Q1= Do you master the use of digital devices such as smart phones, computers, tablets, and digital cameras ...etc?*

*Q2= Are you familiar with the term Digital Storytelling (DST)?*

*Q3= Are you familiar with video editing tool, applications, or websites?*

*Q5= Do you believe that teachers had better use technology in writing modules?*

*Y= Yes, N= No, F= Frequency, P= Percentage.*

From the results of table above, and based on students' self assessments it was confirmed that 56% of the students from EG2 are able to use digital devices including smart phones, computers, and digital cameras ... etc. On the other hand, when asked about their familiarity with the term "Digital Storytelling (DST)" only 32% of them reported that they knew the term whereas, the bigger part of students (68%) in EG2 were ignorant of the term. Still, responses from the next question (Q3) revealed that students were rather ignorant of the term itself instead of the process of making a digital story, a conclusion that was deduced from the 76% responses to Q3 in favour of the video editing tools that are considered digital storytelling tools as previously mentioned.

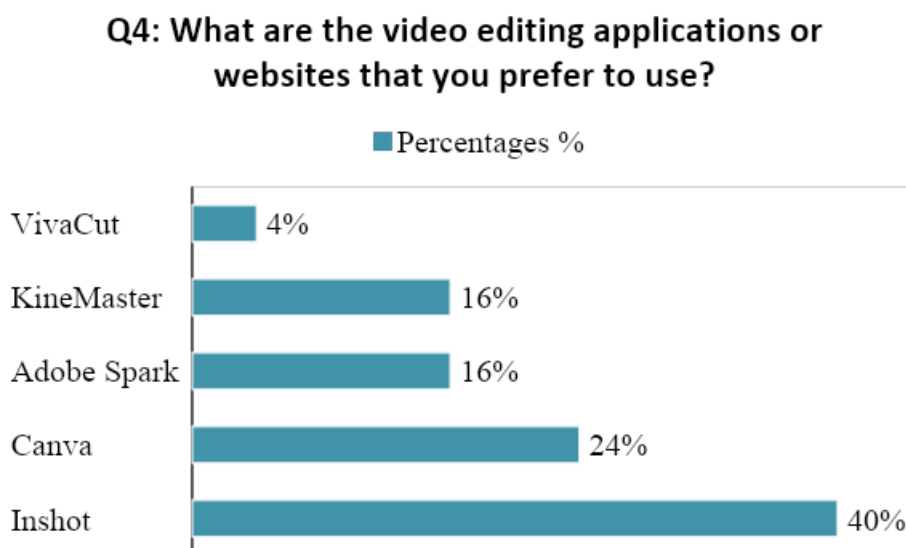
Finally, results from Q5 which records students' overall attitudes towards the integration of DST in writing modules show that the majority of students had a positive attitude towards DST integration in writing modules with a percentage of 60% as opposed to those who have less positive attitudes with a percentage of 44% of the students from

EG2 all prior to the DST’s intervention.

Figure 7 below demonstrates answers to Q4 that documents students’ frequently used and favored video editing tools to be used in favour of the current study.

**Figure 7**

*Experimental Group Two’s Student’s Most Used and Preferred Tools For Video Editing (Or DST).*



Results from Figure above show the frequently used video editing applications and websites as classified by students from EG2. With “Inshot” voted by 40% of the students in this group, next, 24% of students in EG2 voting on Canva. Then, Adobe Spark which is an interesting, user-friendly tool with both advanced features and free multimedia access was voted as preferable in parallel with KineMaster with a percentage of 16% for each. Finally, a video editing application called VivaCut was stated by 4 % of the students in this group mostly for its easy usage and offline features.

### **4.3.2 Results of the students’ Post-Survey**

To answer the research question mentioned and record students’ attitudes towards the integration of DST during narrative writing sessions as a tool to enhance narrative writing performance a survey was conducted for both Experimental groups (EG1 and EG2), and data was collected and analysed through SPSS version 23. Descriptive statistics with percentages were adopted to explore students’ overall attitudes and

interpret the results accordingly.

### **4.3.2 .1 Students' Attitudes Toward the Implementation of digital Storytelling in Writing Classes**

Before descriptive statistics were adopted, a reliability test using Cronbach's Alpha was first conducted. The following table displays the results from the reliability test.

**Table 32**  
*Cronbach's Alpha reliability test*

<b>Groups</b>	<b>Cronbach's Alpha</b>	<b>N of Items</b>
<b>EG1</b>	<b>.879</b>	<b>15</b>
<b>EG2</b>	<b>.827</b>	<b>15</b>

The value of Cronbach's Alpha are higher than .70. Therefore, it can be assumed that this students' survey is reliable. Accordingly, further descriptive statistics were conducted. The following table summarizes the results.

**Table 33**  
*Descriptive statistics for students' attitudes towards DST's implementation in narrative writing classrooms for both groups*

Statement	Students' attitudes in EG2					Students' attitudes in EG1				
	SD	D	UN	A	SA	SD	D	UN	A	SA
	P	P	P	P	P	P	P	P	P	P
S1	0%	4	8%	48	40%	0%	4	4	36	56%
		%		%			%	%	%	
S2	0%	0	8%	48	44%	0%	8	12	60	20%
		%		%			%	%	%	
S3	0%	8	16%	48	28%	0%	4	4	52	40%
		%		%			%	%	%	
S4	0%	4	32%	56	8%	0%	4	8	40	36%
		%		%			%	%	%	
S5	0%	0	8%	36	56%	0%	4	12	48	44%
		%		%			%	%	%	
S6	0%	4	16%	40	40%	0%	4	8	44	44%
		%		%			%	%	%	
S7	0%	8	8%	36	48%	0%	12	12	32	
		%		%			%	%	%	
S8	0%	8	16%	56	20%	0%	4	8	68	20%
		%		%			%	%	%	
S9	0%	4	4%	32	60%	0%	8	12	48	32%
		%		%			%	%	%	
S10	0%	4	16%	52	28%	0%	8	12	40	40%
		%		%			%	%	%	
S11	0%	8	4%	24	64%	0%	8	12	36	44%
		%		%			%	%	%	
S12	16%	44	4%	36	0%	36	36	0	24	4%
		%		%		%	%	%	%	
S13	0%	0	24%	72	4%	0%	12	8	52	28%
		%		%			%	%	%	
S14	0%	4	36%	36	24%	0%	8	24	48	20%
		%		%			%	%	%	
S15	0%	8	12%	48	32%	0%	8	12	40	40%
		%		%			%	%	%	

*Note:* S 1-15= Survey Statements) see Appendix B, F= Frequency, P= Percentage, SD=Strongly Disagree, D=Disagree, UN=Undecided, A=Agree, SA=Strongly Agree. STD= Standard Deviation.

*Decision:* Weighted Average =  $59,96/15 = 3.99$ .

The findings suggest that students from both groups exhibited predominantly favorable attitudes towards the integration of digital storytelling (DST) in narrative writing classrooms. The descriptive statistics unveil some crucial aspects that merit thorough examination.

### **4.3.3 Thematic Analysis**

The open ended survey questions underwent thematic analysis for a deeper understanding of students' perceptions towards the implementation of DST in Narrative writing classes. The themes below were deduced from students' declarations.

#### **4.3.3.1 Theme 1: Involvement and Motivation**

Both groups of students stated that the DST projects fostered a delightful and captivating environment. Within the context of EG1, a significant majority of students, specifically 92%, expressed that the DST project had a positive impact on the overall enjoyment of the classroom environment. Furthermore, a substantial proportion of students, namely 80%, indicated a noticeable increase in their level of interest in writing.

In the case of EG2, 88% of the participants reported a positive classroom climate, while 92% expressed an increased interest in writing as a result of the DST project. This emphasizes the potential of DST to enhance student engagement and motivation, which is essential for effective learning.

### **4.3.3.2 Theme 2: Engagement and Writing skills Enhancement**

The DST projects also aided pupils in maintaining their concentration on their writing assignments. In EG1, 92% of students expressed agreement or strong agreement on the beneficial impact of DST on their ability to keep focus. Similarly, in EG2, 76% of students reported experiencing the same positive effect. Moreover, a substantial majority of students in both cohorts expressed that their proficiency in narrative writing was enhanced as a result of DST. This implies that DST can serve as a beneficial instrument for improving pupils' focus on task and writing skills.

### **4.3.3.3. Theme 3: Proficiency in Grammar, Vocabulary, and Technical Skills**

The majority of students in both groups recognized that DST projects helped to decrease grammatical and spelling errors and promoted use of new vocabulary. More precisely, 88% of participants in EG1 and 80% in EG2 expressed agreement or strong agreement about the effectiveness of DST in reducing errors. Additionally, 76% of participants in EG1 and 84% in EG2 reported feeling motivated to learn and employ new vocabulary. Moreover, DST enabled students to acquire technical skills, as confirmed by 88% of students in EG1 and 76% in EG2.

### **4.3.3.4 Theme 4: Creative Expression and Cooperative Work**

Students valued the chance to articulate their thoughts in a more imaginative manner through DST projects. In EG1, 80% of participants expressed agreement or strong agreement about the ability of DST to facilitate creative expression. In EG2, this percentage increased to 92%. Furthermore, DST facilitated collaboration and cooperation among students, with 80% of students in EG1 and 88% in EG2 recognizing this advantage. These findings emphasize the significance of DST in fostering creativity and collaboration in the classroom.

### **4.3.3.5 Theme 5 Challenges and Obstacles**

In addition to their good attitudes, students encountered difficulties during the DST projects. In EG1, 72% of participants encountered challenges in creating digital stories, while in EG2, 60% of participants experienced comparable obstacles. The challenges encompassed a variety of obstacles, including technical difficulties, the intricacy of producing original ideas, and the efficient management of time. These limitations suggest that although DST has numerous advantages, it also necessitates sufficient assistance and resources to assist students in overcoming these challenges.

### **4.3.3.6 Theme 6: DST task Value and Future Use**

The students in EG1 and EG2 acknowledged the significance of DST assignments, with 80% and 76% respectively believing the content to be significant. Moreover, a substantial proportion of students expressed the belief that DST would be advantageous in their prospective professions, with 68% in EG1 and 60% in EG2 indicating agreement or strong agreement with this statement. This demonstrates that students recognize the tangible uses of DST beyond the confines of the classroom and advocate for its inclusion in academic programs.

In conclusion, the results from the descriptive statistics and thematic analysis indicate that students hold a predominantly positive attitude towards the integration of DST in narrative writing schools. The advantages of DST in improving involvement, innovation, and proficiency growth are apparent. Nevertheless, the study also emphasized the presence of obstacles associated with technological complications, constraints on resources, and the intricacy of the DST procedure. To fully exploit the potential of DST in educational settings, it is crucial to address these issues by providing sufficient support, resources, and training. Future endeavors should prioritize the provision of essential infrastructure and support to enable students to fully capitalize on DST projects, hence assuring a smoother and more meaningful learning experience.

## **4.4 Research Question Four.**

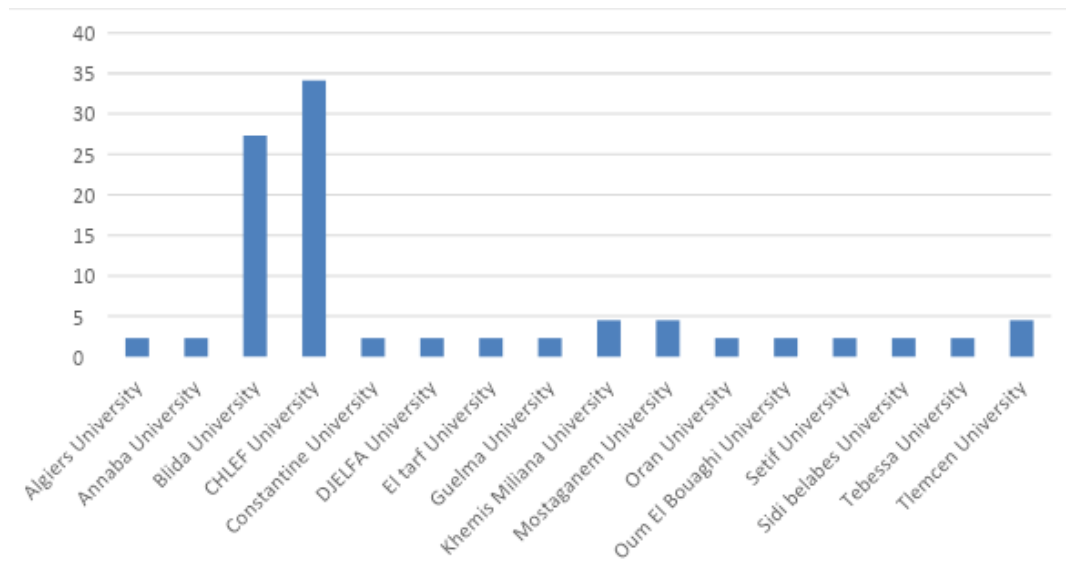
**What Are Teachers' Perceptions of Integrating DST In Writing Classrooms AtThe Algerian Higher Education Level?**

Before further analysis of the teachers' survey, it is important to mention their background information. The tables provide information such as affiliation to university, gender, age, and expertise.

#### 4.4.1 Descriptive Analysis

**Figure 8**

*Teacher's Affiliation to Algerian University*



Most teachers who answered the survey were from the University of Chlef and the University of Blida since indicating their availability to answer the survey while others were from universities such as khemis Meliana, Mostaganem, Telemcen, and Constantine etc as they are displayed in the figure above.

The following tables displays teachers' age and gender. Most teachers ages (38.6% range between 35 to 44 years old while 36.4% ranging between 25 to 34 years old, around 15.9% of the teachers's ages range between 45 to 54 years old and about 9% of the teachers were aged around 55 years old or more.

**Table 34**

*Teachers' Participants' Age.*

<b>Age range</b>	<b>Percent (%)</b>
<b>25-34</b>	<b>36.4</b>
<b>35-44</b>	<b>38.6</b>
<b>45-54</b>	<b>15.9</b>
<b>55+</b>	<b>9.1</b>

Table 34 below displays the percentages of male and female teacher participants. It shows that about 38.6 % males were among teachers who participated in this perceptions' Survey, while 36.4% were females

**Table 35**  
*Teachers' Participants' Gender*

<b>Gender</b>	<b>Percent (%)</b>
Female	<b>36.4</b>
Male	<b>38.6</b>

The table below shows teachers' position in the field of teaching English in Higher Education and the results show that the majority of the teachers were Lecturers 56.8%, while 15.9% were Assistants and around 11.4% of them were Professors, while 6.8% of the teachers reported that they were part time and 4.6% of the teachers were associate Professors and 4.5% were PHD students.

**Table 36**  
*Teachers' Participants' Position/Role*

<b>Position/Role</b>	<b>Percent (%)</b>
<b>Professor</b>	<b>11.4</b>
<b>Associate Professor</b>	<b>4.6</b>
<b>Lecturer</b>	<b>56.8</b>
<b>Assistant</b>	<b>15.9</b>
<b>Phd student who is teaching/temp</b>	<b>4.5</b>
<b>Part time teacher</b>	<b>6.8</b>

The following table demonstrates teachers' work expertise in the field of English language teaching at the Algerian higher educational level, indicating that most teachers (27.3%) had eleven to fifteen years of teaching experience while 25% of the teachersexpertise ranged between 0 to 5 years and 25% of them had a more than 16 years of expertise while 22.7% of the teachers had 6 to 10 years of work experience at the higher education level.

**Table 37**  
*Teacher Participants' Teaching Experience*

<b>Teaching Experience</b>	<b>Percent (%)</b>
<b>0-5 years</b>	<b>25.0</b>
<b>11- 15 years</b>	<b>27.3</b>
<b>16 or more years.</b>	<b>25.0</b>
<b>6-10 years</b>	<b>22.7</b>

The following are teachers responses by items, the table below displays the teachers' resposes percentages on each item of the survey.

**Table 38**  
*Teachers' Perceptions towards the Integration of DST in Writing Classes.*

	SD	D	N	SA	A
	(%)	(%)	(%)	(%)	%
1. Technology should be incorporated in all Algerian classrooms today.	0	2. 3	2. 3	68.2	27.3
2. I have incorporated technology or multimedia-based tasks into my writing classes.	0	9. 1	11 .4	34	45.5
3. I was familiar with the concept of Digital Storytelling (DST) before reading the definition provided above.	2.3	13 .6	13 .6	38.6	31.8
4. I have implemented DST in my writing classes.	2.3	27 .3	27 .3	20.5	22.7
5. Incorporating digital storytelling in the narrative writing classroom offers significant advantages to students.	0	0	13 .6	40.9	45.5
6. The integration of DST in the narrative writing classroom creates a positive and engaging atmosphere.	0	0	11 .4	50	38.6
7. The implementation of DST into writing instruction in Algerian universities may encounter obstacles related to technical infrastructure or lack of resources.	0	4. 5	6. 8	50	38.6
8. Teachers require adequate training or professional development to effectively implement DST into writing instruction.	2.3	2. 3	4. 5	50	40. 9
9. The implementation of DST into the EFL writing curriculum in Algerian Universities can be successful.	0	9. 1	9. 1	31.8	50

The survey questions focus on teachers' perspectives regarding digital storytelling (DST) implementation within their instructional settings. The results show that Teachers are open and willing to embrace technology in the classroom. The overwhelming majority of respondents (92.8%) expressed agreement or strong agreement about the integration of technology into schools (question 1).

Digital storytelling seems to be not extensively used. According to findings from the survey, a significant proportion of teachers (79.6%) have integrated technology or multimedia into their writing classes. However, only (43.2%) of teachers have particularly introduced digital storytelling, as indicated in question 4.

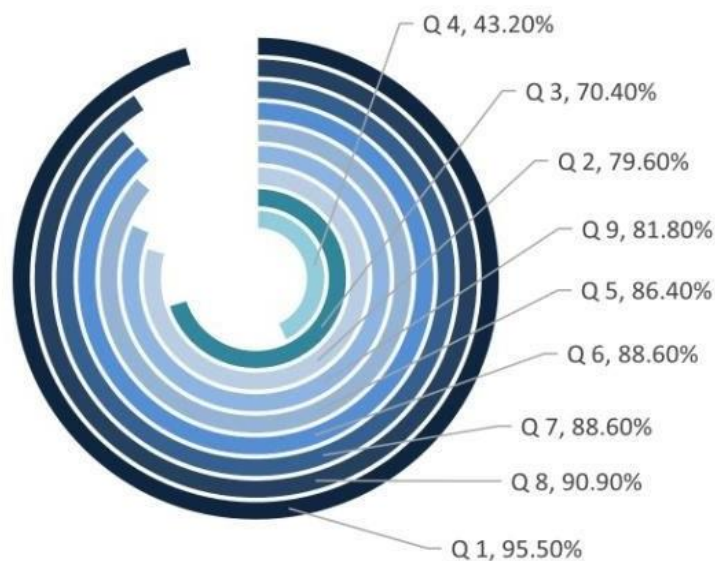
Most Educators recognize the benefits of digital storytelling: (86.4%) of instructors expressed agreement or strong agreement with the enormous benefits that implementing DST provides to students (question 5). Similarly, a majority of teachers (88.6%) believed that DST fosters a favorable and captivating learning environment (question 6).

Concerning the obstacles of the implementation, (50%) of the teachers perceived that there might be challenges associated with technical infrastructure or insufficient resources, as stated in question 7. In addition, an equal proportion of instructors (50%) expressed the need for further training in order to properly implement DST (question 8). Figure 9 provides a visual review of teachers' overall perceptions toward the implementation of DST in narrative writing classrooms.

### **Figure 9**

*Descriptive Statistics of teachers' perceptions toward the implementation of DST in Narrative Writing classes.*

## Strongly Agree (%) & Agree (%)



### Note:

- Q1. Technology should be incorporated in all Algerian classrooms today.
- Q2. I have incorporated technology or multimedia-based tasks into my writing classes.
- Q3. I was familiar with the concept of Digital Storytelling (DST) before reading the definition provided above.
- Q4. I have implemented DST in my writing classes.
- Q5. Incorporating digital storytelling in the narrative writing classroom offers significant advantages to students.
- Q6. The integration of DST in the narrative writing classroom creates a positive and engaging atmosphere.
- Q7. The implementation of DST into writing instruction in Algerian universities may encounter obstacles related to technical infrastructure or lack of resources.
- Q8. Teachers require adequate training or professional development to effectively implement DST into writing instruction.
- Q9. The implementation of DST into the EFL writing curriculum in Algerian Universities can be successful.

In conclusion, Algerian higher education teachers have a generally positive opinion of DST integration in higher education Writing instruction. They are aware of the possible advantages it could have for student engagement and learning. The distinction between familiarity and actual implementation, however, points to important obstacles, chiefly associated with resources, infrastructure, and teacher preparation. These issues must be resolved in order to properly implement DST. These issues include better technical assistance, resource allocation, and extensive teacher professional development initiatives.

Despite these difficulties, there is general optimism (81.8%) about DST's prospects for success, suggesting that with the right assistance and planning, it could prove to be an effective tool in Algerian Higher Education writing classrooms.

## **4.4 .2 Thematic Analysis of Findings**

The survey's open-ended questions were subjected to a thematic analysis. Based on the data, the following primary themes emerged:

### **4.4.2.1 Theme 1 :Resource and Technical Infrastructure Constraints**

A lot of educators brought up the problems of insufficient technology tools and infrastructure. Including issues with Internet connectivity as one teacher reported: "Inadequate internet, teachers not receiving enough training on ICT use," "Unstable network," and "Internet problems", Equipment shortage including, "technological equipments", or "The availability of equipment may be the only obstacle" a teacher declared. Another teacher also reported scarcity of resources in general including "lack of suitable materials, data show and computers rarely available for use, overcrowded classes," said one teacher summarizing the obstacles.

### **4.4.2.2 Theme 2: The necessity for teacher Training**

A significant amount of replies stressed the importance of appropriate teacher preparation as one of the teachers stated: "Teachers require adequate training or professional development to effectively implement DST into writing instruction" other views included "Not all teachers are trained" -and "Teachers may lack the skills needed to implement DST during their courses" Another instructor brought attention to the wider consequences of this lack of training reporting, "TL (Technoliteracy) the user him/herself may not be knowledgeable with such integration not only in terms of equipments used but also the teaching methods that go along with it."

#### **4.4.2.3 Theme 3: Cultural variables and resistance to change**

Some teachers noted that one of the obstacles that may hinder teachers from implementing DST is the opposition to novel teaching techniques. "Resistance to change (inertia)" a teacher declared. Indicating that some teachers may be resistant to use technology in their classrooms for different reasons. In the same vein, another teacher asserted: "It's common for people to dread or detest what they don't comprehend." This demonstrates how awareness and comprehension are crucial for conquering prejudice and fear.

A more detailed teacher response stated: "The implementation of DST in Algerian universities may face obstacles such as... rigid and traditional curricula that resist new methods, and cultural resistance from both faculty and students accustomed to conventional teaching practices." The quote also acknowledges the presence of "cultural resistance" from both faculty and students," indicating a more extensive problem concerning cultural perspectives on education. Faculty members, who may have had training in traditional teaching methods, could be reluctant to embrace DST due to their unfamiliarity or lack of confidence in the necessary technology and pedagogical changes. Some individuals may view DST as a challenge to the established authority of the teacher or as a technique that diminishes the importance of academic education.

Student Resistance: Likewise, students who are familiar with traditional instructional methods may have difficulties when adapting to DST. Some individuals may experience discomfort due to the active and participatory character of DST. This involves engaging in creative processes, collaborating with peers, and using digital tools that they may not be completely at ease with. Students accustomed to passive learning methods, such as attending lectures and jotting down notes, may perceive the requirements of DST as difficult or even daunting.

The opposition to DST may also arise from wider community norms on the definition of real education. Formal education is highly valued in numerous cultures, with a focus on the regulated and hierarchical transmission of knowledge from teacher to student. The emphasis on storytelling, multimedia, and student-driven content in DST may be perceived as less serious or not in line with conventional educational perspectives.

Nevertheless, by employing thoughtful strategies such as adjusting the curriculum, providing training for educators, implementing DST gradually, and adapting to cultural differences, it is possible to overcome these challenges. This will result in a more vibrant and captivating learning atmosphere that effectively exploits the potential of Digital Storytelling.

#### **4.4.2.4 Theme 4: Financial and Time Restraints**

A number of educators brought up issues of time and money constraints: Some teachers responded with short answers as: "Time Constraints", "Financial Constraints". These responses indicating that some teachers may avoid implementing DST for the daunting thought of it being an expensive and time consuming tool. However, without ignoring the fact that DST may be costly in nature, but there are plenty of approaches and techniques that facilitate the adaptation of DST into the Algerian classroom with less if not zero costs, one example might be embracing a “project-based Digital Storytelling approach” in the classroom.

#### **4.4.2.5 Theme 5: Support from Institutions**

A few comments revealed a deficiency in institutional support as one teacher noted: "I attempted to incorporate technology in my teaching however I encountered many obstacles especially with the lack of equipment, no internet, and no support from the administration" stated a Teacher. Apparently, no one can ignore the fact of the lack of equipments in most Algerian Universities despite the widespread use and acknowledgment of its benefits. This teacher's declaration highlights the notable obstacles that instructors frequently encounter while attempting to incorporate technology, such as DST, into their classrooms. A teacher's efficient exploitation of DST can be significantly hindered by the absence of crucial resources such as equipment

(computers, tablets), dependable internet connectivity, and institutional support. In the absence of these essential resources, the potential advantages of DST, such as increased student involvement, innovation, and proficiency in several modes of communication, cannot be completely achieved.

The lack of assistance from the administration is especially alarming, since it implies a deficiency in leadership and a lack of foresight regarding the incorporation of technology in education. In order to achieve successful implementation, schools must prioritize the provision of essential infrastructure and continuous support, which includes technical help and professional development for instructors.

#### **4.4.3 Teachers' Recommendations for Effective DST Implementation**

Despite these difficulties, a number of educators shared positive perspectives and recommendations for the effective implementation of DST:

##### **1. Keep updated with Current Technology:**

Since we are living in a digital age teachers and institutions must recognize the great shift in today's literacy in order to meet the standards of this digital world and the "digital natives". One teacher noted that "We ought to instruct educators and learners on how to use smart phones for this purpose." This quote emphasizes the crucial need of teacher training in successfully implementing out DST. Although DST has the capacity to improve writing education, it also necessitates teachers to possess knowledge of the technology and pedagogical practices necessary to proficiently guide students through the process. Professional development can provide teachers with the necessary expertise to effectively use digital tools, generate multimodal content, and seamlessly incorporate DST into their curriculum.

Continuous professional development opportunities are essential for instructors to remain updated with new tools, methodologies, and best practices, not only limited to initial training. This guarantees that they can proficiently assist their students in using DST to improve their writing and overall literacy abilities.

##### **2. Encouraging Teacher Motivation and Willingness:**

One teacher asserted that "The readiness of the teacher to use these instruments.

Even with the two aforementioned barriers, everything is doable if you have the will." Indicating that teachers might need motivation themselves to implement DST into their classrooms. Workshops and effective story circles on successful DST implementations may positively influence teachers' decision for implementation.

### **3. Training and Assistance:**

As mentioned earlier workshops or regular training sessions may invite more teachers and convince them to implement Digital Storytelling in their Classrooms. One teacher confirmed that "In order to successfully integrate DST into writing instruction, teachers need to have the necessary training or professional development."

### **4. Handling Cultural Resistance:**

As one educator pointed out, it's critical to use "knowledge and understanding" to combat prejudice and fear. It is important for teachers to embrace the change for the sake of professional development and the benefits it would provide for students besides the opportunities that would follow this step of openness to try new experiences.

### **5. Curriculum and Assessment Adaptation:**

"Moreover, current assessment techniques might not be well matched to DST objectives, calling for a change in assessment strategies." One teacher asserted. This indicates that traditional evaluation methods, which typically emphasize memorization, essay writing, or standardized examinations, may not fully encompass the wide range of skills and educational achievements that DST seeks to cultivate.

**Holistic Evaluation:** Due to the inclusion of various forms of expression in DST, assessment methods should be more comprehensive. This entails assessing not only the textual material, but also the efficacy of the visual and audio components, the logical consistency of the storyline, and the level of ingenuity exhibited in integrating these parts.

**Process-Oriented Evaluation: Dynamic Storytelling Technique (DST)** often involves a complex and repetitive procedure in which students engage in brainstorming, planning, drafting, and refining their stories. When designing assessment procedures, it is important to take into account the entire process, which includes evaluating the student's capacity to generate ideas, utilize technology, and work together

With others, rather than merely concentrating on the end result.

To summarize, the quote emphasizes the necessity of creating novel assessment methodologies that align more effectively with the objectives of Digital Storytelling. These strategies must have the ability to assess a broad spectrum of talents, such as digital literacy, creativity, and the proficiency to communicate effectively using many means of communication. Adopting new evaluation methods is crucial for maximizing the educational benefits of DST and equipping students with the necessary skills for the challenges of the modern era.

In conclusion, even though Algerian instructors in higher education are aware of the major challenges in integrating DST, which are mostly associated with infrastructure, training, and cultural issues, a larger number of them also believe that the DST programs may be implemented successfully with the right assistance, resources, and training. The focus on teachers' willingness to participate and their inventive use of current technology, such as cell phones, implies that, in spite of obstacles, ambitious educators might initiate successful DST integration.

# **Chapter Four**

## **Discussion and Conclusion**

# Chapter 4: Discussion and Conclusion

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## Introduction

Digital Storytelling (DST) has a significant impact on students' narrative writing performance as evidenced by the previous chapter. Additionally, This chapter will discuss key findings and link them to the literature besides providing theoretical implications, pedagogical implications and policy and practice implications. Each section provides a thorough review of the study's findings, referring back to the relevant literature and theoretical frameworks, and offering suggestions for further research.

### **The Impact of Digital Storytelling on Narrative writing Performance**

The main objective of this study was to evaluate the influence of digital storytelling (DST) on the narrative writing proficiency of undergraduate students learning English as a foreign language (EFL). The study performed a two-way analysis of variance (ANOVA) to assess the impact of Digital Storytelling (DST) on five predetermined measures: Organization, Language Use, Coherence, Conventions, and Creativity. In addition, ANCOVA was employed to mitigate any pretest disparities, while independent sample t-tests were performed to compare the posttest scores of the experimental and control groups.

The findings demonstrated significant main impacts of the DST intervention on four of the five narrative writing criteria: Organization, Language Use, Conventions, and Creativity. The treatment (DST) had a significant effect on these elements, as the experimental groups regularly performed better than the control groups. There were no significant interaction effects observed between the pretest and the treatment, suggesting that the efficiency of the DST intervention was not influenced by pretest sensitization.

Research in the field indicates that Digital Storytelling (DST) enhances students' story writing and overall writing skills in the literature (Robin, 2008; Campbell, 2012; Yang & Wu, 2012; Yamaç & Ulusoy, 2016; Sarica & Usluel, 2016; LoBello, 2015; Tanrikulu, F. (2020), Munajah, 2022; Syam, 2022; Sönmez, 2023). And the findings of this study indicate that digital storytelling is a promising approach for improving narrative writing abilities in English as a Foreign Language (EFL) learners. The notable enhancements reported in Organization, Language Use, Conventions, and Creativity can be assigned to the multimodal characteristic of DST, which combines visual, auditory, and textual components. This is consistent with the theoretical foundations of the study, specifically the Multimodal theory, which suggests that learners get advantages from interacting with many forms of communication (Kress & Van Leeuwen, 2001). The results align with prior studies that emphasize the advantages of DST in promoting creativity and enhancing linguistic proficiency (Robin, 2008; Sadik, 2008).

The notable impact of DST on Organization suggests that the intervention assisted students in structuring their narratives with greater effectiveness. This may be attributed to the visual and sequential characteristics of DST specifically the phase of Storyboarding activities, which necessitate students to strategically plan and arrange their narratives prior to incorporating multimedia components. Similarly, the enhancement in Language Use indicates that DST motivated students to be more mindful of their selection of vocabulary, sentence organization, and general accuracy in language. This discovery corroborates the idea that engaging in multimodal writing tasks might improve language proficiency by allowing students to practice and improve their linguistic abilities in a meaningful setting (Hafner & Miller, 2011).

The various features of Digital Storytelling, which require students to engage in the planning, authoring, revising, and presenting stages of their tales, are responsible for the overall improvement (Ohler, 2013). Adding multimedia components to a written narrative is just one aspect of creating a digital story. Students' ability to reason through their ideas and use language to effectively convey them can both be improved by DST's this integration as it is evidenced by the current study's findings.

The notable enhancements in "Conventions" highlight the role of DST in fostering adherence to narrative writing standards, including grammar, punctuation, and spelling. The act of crafting digital narratives likely encouraged students to carefully analyze and revise their work, resulting in enhanced proficiency in this aspect which was evidenced in the thematic analysis part of the previous chapter where students collaborated to support each other to overcome any challenges faced. This finding coincides with the Social Constructivist theory, which stresses the significance of collaboration and peer feedback in the process of learning (Vygotsky, 1978). The cooperative aspect of DST, wherein students frequently collaborate to generate and evaluate one another's narratives, might have played a role in their enhanced proficiency in Conventions.

The notable impact of DST on "Creativity" is particularly remarkable, considering creativity is frequently regarded as a challenging quality of writing to improve through conventional teaching methods. The findings indicate that DST afforded students the autonomy to explore various concepts, subjects, and methods of communication, resulting in the production of more imaginative storylines. This discovery is consistent with other research that has recorded the innovative capacity of DST in the field of language instruction (Gregori-Signes, 2014).

The ANCOVA results further corroborate the findings of the two-way ANOVA, showing that the DST intervention had a significant positive effect on Organization, Language Use, Conventions, and Creativity, even after controlling for pretest differences. This suggests that the improvements observed in the experimental groups were not merely due to initial differences in these criteria but were genuinely attributable to the DST intervention.

The lack of significant effects in "Coherence", as revealed by ANCOVA, may indicate that this criterion is less sensitive to the effects of DST. It is possible that coherence in narrative writing is influenced more by other factors, such as prior writing experience or intrinsic cognitive abilities, which were not directly addressed by the DST intervention. This finding warrants further investigation to determine the specific factors that contribute to coherence in narrative writing and how they can be enhanced through instructional interventions.

The lack of notable pretest impacts on posttest scores, as indicated by the Solomon four-group design, enhances the credibility of these findings. This rigorous experimental design effectively tackles possible factors that could undermine the internal validity of the study, such as the testing effects and maturation (Braver & Braver, 1988). The consistent findings from several group comparisons ( $02 > 01$ ,  $02 > 04$ ,  $05 > 06$ ,  $05 > 03$ ) provide additional evidence for the validity of the treatment effect, indicating that DST can effectively improve writing performance in similar educational settings. This discovery is significant because it indicates that the enhancements reported in the experimental groups were exclusively caused by the DST treatment, rather than any prior test sensitization. This corroborates the accuracy of the study's results and reinforces the argument for the efficacy of DST in improving narrative writing skills.

The absence of interaction effects further suggests that the pretest did not bias the students' responses to the DST intervention, along with prior research on pretest sensitization in educational studies (Campbell & Stanley, 1963). This discovery is especially significant within the framework of the Solomon design used in this research, as it offers proof that the pretest did not distort the results. Nevertheless, it is crucial to acknowledge that although the general influence of DST on writing performance was positive, this study did not further investigate gender and the individual variations in students' reactions to this intervention. Future research would be enhanced by conducting a more detailed analysis of how characteristics like prior digital literacy, learning styles, or language competency might influence the impact of DST on writing performance.

## **5.2 Manifestation of an Effective, Meaningful Learning Environment**

This section of the chapter examines the results of the classroom observations carried out to evaluate the extent to which the incorporation of Digital Storytelling (DST) promotes a significant learning environment in Algerian higher education. This approach is structured around five pedagogical dimensions: Active Learning, Collaborative Learning, Constructive Learning, Authentic Learning, and Classroom Management. Observers documented student actions during three unique phases of narrative writing: prewriting and storyboarding, drafting and multimedia collecting, and final production and presentation. These findings are situated within the current body of research and educational frameworks of DST, adding to our comprehension of its impact on improving student involvement and learning.

### **5.2.1 Active Learning**

The data consistently proven that DST significantly enhances active learning in both experimental groups (EG1 and EG2). During all three stages, students actively engaged with multimedia tools, demonstrating a high level of involvement in the creative process. The result is consistent with the research conducted by Robin (2008), which proposed that DST promotes active engagement in the creation of stories by including digital components. Engagement reached its highest point during the final production phase, as students were enthusiastic about showcasing their work. This supports the notion that showing personal projects promotes internal motivation (Ryan & Deci, 2000).

Nevertheless, disparities between EG1 and EG2 indicate changes in the level of involvement depending on the seating configurations and the instruments employed. Observers remarked that students placed at the back in EG2 showed decreased involvement, which suggests that classroom characteristics may impact the overall learning experience (Becker et al., 2017). To resolve these inconsistencies, it may be necessary to implement specific measures, such as rotating seating arrangements or employing adaptable teaching methods, in order to assure equal participation for all.

Empirical evidence demonstrates that Digital Storytelling (DST) promotes a stimulating and cooperative educational atmosphere. The presence of elevated levels of interest, active engagement, and proficient use of digital resources suggests that DST has the potential to revolutionize the conventional writing classroom into a more vibrant and engaging environment. This is in accordance with the idea of "New Learning Environments" put forth by Kalantzis and Cope (2012), which highlights the significance of learner involvement, cooperation, and learning experiences that involve multiple modes of communication.

### **5.2.2 Collaborative Learning**

The level of collaboration among students experienced significant improvements during the sessions, namely during the drafting and final production phases. Both groups demonstrated the use of peer input and teamwork, with EG2 displaying a higher level of competence in using online platforms for collaborative purposes. This phenomenon is supported by scholarly research that highlights the significance of DST in promoting the development of cooperative learning environments (Hung, Hwang, & Huang, 2012).

Specifically, the incorporation of online tools in EG2 corresponds with research emphasizing the significance of digital technologies in enabling peer-to-peer communication (Koehler & Mishra, 2009). Nevertheless, despite the favorable results, there were difficulties in properly incorporating peer feedback throughout the initial phases of storyboarding, namely in EG1. These data indicate that DST improves collaborative learning, but students may want extra support or instruction in giving constructive feedback online. Further research could explore the integration of structured peer feedback models, such as those suggested by Nicol and Macfarlane-Dick (2006), into DST contexts to enhance early-stage collaboration.

### **5.2.3 Constructive Learning**

Students displayed developing skills in employing digital tools and constructing narratives, showcasing the effective educational processes enabled by DST. Observers saw a progression over time, as students in both groups transitioned from basic understanding to more advanced use of digital tools and storytelling methods. This aligns with the findings of Kearney (2011), who discovered that DST promotes iterative learning, a process in which students enhance their work through repeated rounds of feedback and self-reflection.

Notably, students in EG1 shown elevated levels of creativity and problem-solving skills throughout the final production phase, but those in EG2 displayed an early proficiency in using digital tools at the drafting stage. These findings indicate that the way teaching is delivered or the type of classroom setting might impact students' participation in active and meaningful learning. Further studies could investigate the effects of differentiated teaching in DST classrooms in order to enhance learning results to a greater extent.

### **5.2.4. Authentic Learning**

An important benefit of DST is its capacity to create authentic and purposeful learning experiences. Both sets of students regularly related their narratives to personal experiences and real-world events, with a notable focus on the socio-cultural environment. This included exploring themes such as grief and mortality in the context of the COVID-19 pandemic. This validates the conclusions of Sadik (2008), who posited that DST affords students the chance to develop knowledge rooted in their personal experiences.

The authentic learning witnessed in both groups emphasizes the significance of DST in cultivating a learning atmosphere that is both intellectually interesting and personally meaningful. Nevertheless, whereas the majority of students in EG1 were able to establish explicit links between their digital stories and real-world situations, a small number encountered difficulties in identifying the applicability of their work in the initial phases. To address this difference, it would be helpful to incorporate additional structured reflection exercises at the beginning of the DST process. This would ensure that all students can make significant connections right from the start.

### **5.2.5 Classroom Management and Engagement**

DST might have a beneficial effect on the management of the classroom. During the sessions, students exhibited exceptional levels of concentration and interaction, with limited instances of off-task behavior. Students' time management abilities were enhanced as they were more acquainted with the DST process, especially during the final production phase when technological challenges emerged. The results are consistent with Mayer's (2001) cognitive theory of multimedia learning, which proposes that engaging in multimedia tasks improves students' capacity to successfully handle cognitive load.

However, the occasional technological difficulties that occurred during the last session highlight the necessity for enhanced digital infrastructure and assistance. Although these concerns did not greatly impede learning, they emphasize the significance of ensuring that DST is accompanied by reliable technology resources. To fully maximize the potential advantages of DST in higher education settings, it is crucial to address the existing infrastructural obstacles.

These results indicate that DST not only improves student involvement and cooperation but also promotes meaningful and productive learning experiences. This study expands on earlier research by illustrating the practicality of DST in the context of higher education in Algeria, which has not been adequately explored in previous studies.

### **5.3 Attitudes and perceptions of Teachers and Students Towards the integration of DST in the writing classroom.**

Both students and teachers exhibited a positive attitude towards the integration of DST in writing classrooms. The willingness to accept and embrace new educational technologies is essential for their effective application (Ertmer & Ottenbreit-Leftwich, 2010). The significant proportion of students, with 80% in experimental group 1 (EG1) and 92% in experimental group 2 (EG2), who reported an increased enthusiasm in writing, along with the more pleasant classroom

atmosphere reported by 92% in experimental group 1 (EG1) and 88% in experimental group 2 (EG2), indicates that Digital Storytelling can be applied as a motivational instrument to potentially address the problem of student engagement in writing courses.

These results correspond with the self-determination theory of motivation (Ryan & Deci, 2000), which suggests that intrinsic motivation is increased when individuals have a sense of autonomy, competence, and connection with others. DST seems to offer prospects for all three aspects: independence in crafting narratives, proficiency in managing digital tools, and connection through collaboration.

The teachers' positive attitudes, namely about the benefits of DST (86.4% agreement) and its capacity to promote a conducive learning environment (88.6% agreement), demonstrate their readiness to embrace this technology. This is consistent with the Technology Acceptance Model (Davis, 1989), which posits that the perception of utility plays a crucial role in the adoption of technology.

However, the obstacles associated with technical infrastructure, resources, and teacher training emphasize the necessity for institutional support and professional development programs to assist the successful adoption of Digital Storytelling (DST). The results align with previous studies on the incorporation of technology in education (Hew & Brush, 2007; Bingimlas, 2009) and emphasize the significance of addressing both technological and pedagogical factors in teacher training for DST implementation.

## **5.4 Theoretical Implications**

The results of this study have important consequences for several theoretical frameworks in the fields of education and language acquisition. Firstly, they provide reinforcement for the constructivist learning theory (Vygotsky, 1978; Bruner, 1996), which highlights the significance of active involvement and cooperation in the process of learning. In this study, DST was used to enable students to actively create knowledge by creating digital narratives, which is in line with constructivist concepts.

Moreover, the results can be analyzed using the multiliteracies paradigm as proposed by the New London Group in 1996. Digital Storytelling (DST) naturally incorporates several forms of creating meaning, such as language, visuals, and sounds. The enhancement in pupils' narrative writing performance implies that actively participating in various forms of literacy may result in a beneficial transfer effect on conventional literacy skills. Advocating for Gunther Kress's (2003) concept of synaesthetic meaning-making as put out by the multiliteracies framework which refers

to the generation of entirely new forms of meaning by transferring ideas across different modalities of communication. This phenomenon is responsible for the emergence of qualitatively distinct meanings.(Kress, 2003,P. 36 as Cited in Nelson, 2006, P.56)

## **5.5 Pedagogical Implications**

The effectiveness of Digital Storytelling in enhancing various aspects of narrative writing implies that it could be a helpful supplement to conventional ways of writing education. The potential benefit of the tool in promoting collaboration learning is in line with contemporary pedagogical trends that prioritize active and cooperative learning (Johnson & Johnson, 2009).

Moreover, the use of several modes in creating Digital Stories can assist students in effectively organizing their thoughts before transmitting them in written form. This is in line with research on multimodal composition and its advantages for the development of writing skills (Jewitt, 2008). However, the identified areas for enhancement suggest that the implementation of Digital Storytelling should be planned carefully, with a focus on controlling for students' time management skills, promoting self-reflection, and establishing clear links to real-life situations. This indicates a requirement for a well-organized Digital Storytelling approach that integrates these components in addition to the technical parts of digital story development.

An effective strategy would be to include Digital Storytelling (DST) into a structured framework for writing, such as the process writing framework proposed by Graves (1983). This would involve aligning the various steps of digital story creation with the corresponding stages of the writing process. This could enhance and strengthen essential writing skills while simultaneously cultivating digital literacy. Incorporating reflective practices throughout the Digital Storytelling process can help fulfill the requirement for increased self-reflection and metacognitive skills in students' learning (Schön, 1983).

The discovery that Digital Storytelling enhances the use of new vocabulary with 76% in experimental group 1 (EG1) and 84% in experimental group 2 (EG2) which implies that Digital Storytelling has the potential to be a valuable instrument for acquiring vocabulary in writing education. This is consistent with research that supports the advantages of multimodal learning for the improvement of vocabulary (Mayer & Moreno, 2003). It also indicates that Digital Storytelling could be especially beneficial in English as a Foreign Language (EFL) situations.

## **5.6 Policy and Practice Implications**

The findings of this study have significant implications for educational policies and practices in Algerian higher education, as well as in other settings that are comparable. As a result of the positive impact that Digital Storytelling (DST) has on writing skills, policymakers ought to give careful consideration to the possibility of incorporating Digital Storytelling into writing curricula at the higher education level. Nevertheless, this integration needs to be strengthened by making very necessary improvements to the infrastructure and implementing efficient programs for the training of teachers.

This research provides practitioners with empirical support for the use of DST in writing instruction, which is beneficial to the practitioners. It is possible for educators to make use of these results in order to argue for the inclusion of digital storytelling in their curriculum and to improve their teaching methodological practices. The identified problems and potential for development can also serve as a road map for teachers to follow in order to improve the efficiency of their writing instruction that is based on digital storytelling.

The adoption of digital storytelling should be supported by universities through the allocation of resources, the provision of technical assistance, and the provision of chances for academic professionals to advance their professional development. Providing students with additional aid and resources for the creation of digital stories would be made possible through the establishment of writing centers or laboratories that emphasize DST.

## **5.7 Implications for Future Research**

This study sheds light on how DST affects writing and learning. It also offers several research opportunities. Examining DST's long-term effects on writing proficiency and attitudes and examining how learning styles and digital literacy affect DST and writing performance, to do so future studies should consider using a longitudinal approach. In addition to assessing DST's effectiveness against other technology-enhanced writing methods. Testing DST for academic writing instruction. Investigating DST adaptation for various cultures. Examining how DST might be combined with artificial intelligence and virtual reality to improve writing instruction.

## **5.8 Limitations of the study**

Like any research, this study has encountered certain obstacles that inhibited its complete implementation and stopped it from achieving even more definitive results. The research was carried out using a sample size of 100 students who were exclusively enrolled at the university of

Chlef due to budgetary constraints. Although the current sample size was adequate for statistical analysis, the findings would have been more applicable to the broader Algerian higher education settings if a bigger and more diversified sample from multiple universities was used. Moreover, the study specifically examined the immediate consequences of implementing DST.

It is acknowledged that extending the duration of the intervention could have yielded more reliable observations regarding the long-term effects of DST on writing proficiency and attitudes. The data available for observation was restricted to only three sessions due to time constraints, thereby failing to systematically capture the enduring effects of DST on student learning. Furthermore, the difference in classroom dynamics between EG1 and EG2 suggests that additional investigation is required to examine the impact of diverse teaching methodologies and classroom settings on the efficacy of DST.

# General Conclusion

# General Conclusion

## Introduction

This study examined the influence of Digital Storytelling (DST) on the narrative writing performance of second year undergraduate students at the University of Hassiba Ben Bouali who are learning English as a Foreign Language (EFL) and all of them enrolled in a writing module beside others. The study employed a rigorous research design despite its complexity, involving four groups (Solomon Design) Experimental group 1 (pretest + treatment), EG2 (pretest + treatment), CG1 (no pretest + no treatment) and CG2 (no pretest + no treatment). Its aim was to conduct a thorough analysis of the impact of DST on different elements of narrative writing, including Organization, Language Use, Conventions, Coherence, and Creativity and ensure validity of the findings.

In addition, the study used classroom observations and surveys to investigate the wider educational effects of DST, comprising its impact on the learning environment and providing an active, collaborative, constructive, authentic learning and affording effective classroom management. The research also aimed to thoroughly understand the nuanced attitudes and perspectives of both teachers and students regarding the incorporation of DST in writing instruction within the Algerian higher education system.

The results suggest that DST is an effective instrument for improving students' ability to write well organized narratives and create an effective educational atmosphere in the classroom. Therefore, This chapter presents a concise overview of the main discoveries, examines their consequences, and offers suggestions for future investigation and application.

## Summary of key findings

This study has documented the effectiveness of Digital Storytelling (DST) as an innovative teaching tool for improving narrative writing performance among second-year undergraduate students of English at Hassiba Ben Bouali University in Algeria. The study revealed that DST had a significant positive impact on students' narrative writing performance in four of the evaluated criteria namely: Organization, Language Use, Conventions, and Creativity. The validity of the results was further supported by a two-way analysis of variance (ANOVA) and ANCOVA, which showed that these improvements were not the result of the pretest sensitization. The improvement in organization can be attributed to the visual and chronological characteristics of DST, especially during the storyboarding stage, which compelled students to efficiently organize and structure their narratives.

There was a noticeable improvement in Language Use, as students demonstrated increased focus on vocabulary, sentence structure, and grammatical precision. The improvement in conventions, namely grammar, punctuation, and spelling, emphasizes the value of peer collaboration in DST, as students often evaluate and modify each other's work, promoting a more profound comprehension of writing standards further highlighting the vital role of social interaction in the process of learning.

The development of creativity, which is frequently difficult to achieve with traditional teaching approaches, was significantly enhanced by the use of DST. The incorporation of many modes in DST provided students with the opportunity to explore various narrative strategies, leading to the creation of more unique and innovative stories. Nevertheless, the Coherence score didn't reach much significance, indicating that it might be impacted by qualities not explicitly targeted by the DST, such as previous writing proficiency or cognitive aptitude. Additional investigation is necessary to ascertain how to better facilitate coherence in narrative writing.

On the Other hand, classroom observations were carried out to assess the degree to which DST fosters a meaningful and effective learning environment. The observations were organized based on five pedagogical dimensions: Active Learning, Collaborative Learning, Constructive Learning, Authentic Learning, and Classroom Management. The observations consistently demonstrated that DST greatly improves active learning. Both experimental groups (EG1 and EG2) of students actively engaged with multimedia technologies throughout the whole process of narrative writing, with a special emphasis on the final production phase, where their passion for presenting their work reached its highest point.

The degree of cooperation among students experienced a significant enhancement, particularly throughout the stages of drafting and final production. In EG2, the use of online platforms for collaboration resulted in a more noticeable emphasis on peer input and team work. This highlights the significance of digital technology in facilitating peer-to-peer communication. However, difficulties in incorporating peer feedback in the initial phases of storyboarding indicate the necessity for supplementary assistance to improve collaborative learning in DST environments.

Observers witnessed a noticeable improvement in students' ability to effectively use digital tools and create narratives through the process of constructive learning. EG1 students exhibited higher creativity and problem-solving skills throughout the final production stage, whereas EG2 students displayed early mastery in leveraging digital tools during the drafting process. These findings indicate that the method of delivery and the environment in which the class takes place

Might affect how students participate.

The results also revealed that DST afforded students the chance to establish connections between their stories and personal experiences, as well as actual events, so fostering authentic and meaningful learning experiences. This was especially apparent in storylines that dealt with socio-cultural topics, such as the COVID-19 epidemic. Surprisingly, it was found that the implementation of DST had a favorable influence on classroom management, as it resulted in a significant increase in student focus and a noticeable decrease in off-task behavior. As students were more acquainted with the DST process, their ability to manage their time became better, especially during the final production phase when they faced technological difficulties.

Considering both surveys' results, students and teachers had favorable attitudes regarding the incorporation of DST in the writing curriculum in the Algerian higher education context. The data shows that a large majority of students in EG1 and EG2 experienced a boost in their passion for writing. Additionally, the majority of students in EG1 and EG2 reported a more enjoyable classroom environment and were more open to the use of DST in their writing courses. The majority of teachers expressed positive views of the advantages of DST and its capacity to promote a favorable learning atmosphere, and they demonstrated positive perspectives toward the incorporation of Digital Storytelling in the Algerian higher education setting, acknowledging its capacity to create meaningful and effective learning experiences when carefully planned and adjusted based on the learning objectives.

However, the study has also highlighted significant obstacles when implementing Digital Storytelling, such as limited resources, the necessity for teachers' training, and possible cultural resistance to innovative teaching approaches. These findings emphasize the need for a thorough and adaptable approach for an effective implementation of Digital Storytelling into higher education curricula in Algerian higher education contexts.

The research enhances the overall understanding of the effective incorporation of DST into narrative writing classrooms, linking back to constructivist learning theories and multiliteracies framework. Additionally, it provides valuable insights for educators and policymakers who are looking to improve writing instruction using technology-based approaches. Although this research recognizes limitations such as the small number of participants and the study's narrow focus on immediate effects, it still establishes a solid basis for future studies on the long-term influence of DST on developing writing skills and its potential relevance in various academic fields and cultural settings.

Overall, this study highlights Digital Storytelling as a promising technique for updating writing instruction in Algerian higher education. The successful execution of this plan will include careful strategizing, sufficient allocation of resources, and continuous assistance for both educators, learners and institutions. By implementing these conditions, DST has the capacity to greatly improve writing instruction and contribute to a more captivating and efficient learning environment in Algerian universities and comparable educational settings.

This research not only improves the understanding of technology-enhanced writing instruction but also lays the groundwork for future studies to investigate the whole capabilities of digital tools in promoting 21st-century literacy skills among students in various educational environments.

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# Appendices

# Appendices

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## Appendix A

### Teachers' Perceptions Survey (Electronic by Google Forms)

**Implementing Digital Storytelling in narrative Writing Classes (2nd year Undergraduates).**

*Dear teacher,*

Thank you for participating in this survey which is designed for University-level teachers of English in Algeria. We aim to gather insights on incorporating Digital Storytelling (DST) into the EFL Narrative Writing curriculum. DST involves using digital tools to create multimedia-enriched narratives, merging traditional storytelling with visual and auditory elements. The objective of this strategy is to encourage creativity, engagement, and the development of multiple literacy skills in the EFL Writing Instruction.

**Note:**

DST = Digital Storytelling; EFL English as a Foreign Language.

#### **Part One: Background information:**

Please select suitable answers.

1. What is your age range?

25-34

35-44

45-54

55+

2. What is your gender?

Male

Female

3. At which Algerian University are you currently working? .....

4. What is your position/role?
- Lecturer
  - Assistant
  - Professor
  - Autre:
5. How many years of teaching experience do you have?
- 0-5 years
  - 6-10 years
  - 11-15 years
  - 16 or more years.

**Part two: Perceptions and attitudes towards the implementation of DST:**

*Please rate your level of agreement with the following statements*

1. Technology should be incorporated in all Algerian classrooms today.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree.

If you agree or disagree with the above statement please justify.....

2. I have incorporated technology or multimedia-based tasks into my writing classes.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

3. I was familiar with the concept of Digital Storytelling (DST) before reading the definition provided above.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

4. I have implemented DST in my writing classes.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

If you agree with the above statement, kindly describe the overall experience (Positive/negative).

5. Incorporating digital storytelling in \* the narrative writing classroom offers significant advantages to students.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6. The integration of DST in the narrative writing classroom creates a positive and engaging atmosphere.

- Strongly Agree
- Agree
- Neutral

- Disagree
- Strongly Disagree

7. The implementation of DST into writing instruction in Algerian universities may encounter obstacles related to technical infrastructure or lack of resources.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

If you believe there are other obstacles that may hinder the implementation of DST, please state them. ....

8. Teachers require adequate training or professional development to effectively implement DST into writing instruction.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

9. The implementation of DST into the EFL writing curriculum in Algerian Universities can be successful.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

If you agree or disagree with the statement above, please suggest how could the implementation be successful.....

10. Please share any additional views, perspectives, or experiences you have regarding the integration of digital storytelling into the EFL narrative writing classroom in an Algerian higher education context.....

*Thank you for answering this questionnaire. We appreciate your valuable feedback.*

## Appendix B

### Students' Attitudes towards DST's Implementation in Written Expression Classrooms Survey.

*Dear Students, Kindly answer this survey based on your level of agreement with the following statements by crossing the right column.*

*(Note: SD = Strongly Disagree, D =Disagree, UN = Undecided, A =Agree, SA = Strongly Agree)  
(DST = Digital Storytelling)*

**Part One: Background Information**

1. Are you?     Male     Female
2. What is your age range?     18-21     22-24     25-27

**Part Two: Attitudes towards DST's Implementation in Written Expression Classrooms.**

**I. Classroom Atmosphere and Engagement**

Statements	SD	D	UN	A	SA
1. The DST project creates a pleasant (fun) atmosphere in the classroom.					
2. The DST project made me more interested inwriting.					
3. The DST project helped me stay focused on mywriting tasks.					

**II. Narrative Writing Skills Improvement**

Statements	SD	D	UN	A	SA
4. The DST project improved my narrative writing skills.					
5. The DST project helped me to effectively organizeand structure my narrative paragraph.					
6. The DST project helped me to minimize and avoidgrammar and spelling mistakes.					
7. The DST project encouraged me to learn and usenew vocabulary.					

### III. Addressing some 21st Century Skills

Statements	SD	D	UN	A	SA
8. The DST project helped me to gain some technical skills.					
9. The DST project helped me to express my ideas more creatively.					
10. The DST project helped me to take control of my learning.					
11. The DST project encouraged me to cooperate and collaborate with my peers.					

### IV. Challenges and Obstacles

Statements	SD	D	UN	A	SA
12. The process of making digital stories was challenging (difficult).					

1. **Follow up:** Kindly list the obstacles and challenges faced while creating digital stories.

.....

.....

.....

.....

### V. DST's Appreciated Value

Statements	SD	D	UN	A	SA
13. The content of the digital storytelling tasks was meaningful.					
14. I believe that DST as a tool is useful, and would help me in my future career.					

**Follow-up:** If you agree with the statement above, kindly explain how.

.....

.....

.....

Statement	SD	D	UN	A	SA
15. I strongly support the integration of digital storytelling into writing sessions and other academic modules because of its numerous educational benefits.					

**Follow-up:** Follow-up: If you agree or disagree with the statement above, kindly state why.

.....

.....

.....

.....

.....

## Appendix C

### Structured Classroom Observation Checklist (SCOC)

Observer:.....

Observed Group:.....

Session N:.....

Date :.....

Time :.....

#### Instructions for Observers

1. Observe students equally.
2. Focus on specific behaviours and interactions related to Digital Storytelling.
3. Use the checklist to check each item (VE= Very Evident,E= Evident,SE=Somewhat Evident,NO) and add related comments.
4. Review and compare observations with the other observer after each observation session to ensure consistency and reliability.

Categories	Items	V E	E	S E	N O	Comments
Active Learning	Students effectively engage with multimedia components, including images, audio, and video.					
	Students demonstrate enthusiasm and active participation in digital storytelling activities.					
Collaborative Learning	Students use online platforms to engage in peer feedback and facilitate discussions.					
	Students work collaboratively to edit, create and share digital stories.					
Constructive Learning	Students use different digital storytelling tools and techniques to express their ideas creatively.					

	through digital stories.					
	Students reflect on their work and make improvements.					
	Students use problem solving skills to overcome Technologyrelated obstacles.					
Authentic Learning	Digital storytelling assignments reflect real-world contexts.					
	Students relate their stories to personal experiences or current events.					
Classroom Management	Students manage classroom time efficiently, limiting any instances of wasted time or interruptions.					
	Students are well focused while using the DST tools with limited disruptions or off-task behaviours.					
	Students demonstrate an understanding of narrative structure					

## Appendix D

### Narrative Writing's Performance Rubric

*This rubric is designed for 2<sup>nd</sup> year students of English at HBB University; its main objective is to assess students' narrative paragraph writing's performance. This rubric contains five key criteria necessary for evaluating and improving students' performance when writing a narrative paragraph.*

Criteria Score 20/20	Excellent Performance	Good Performance	Fair Performance	Poor performance	Very poor performance
<b>Organization</b>  <b>(3pts)</b>	<p><b>Initiation (beginning): 1pt</b></p> <p>Proficiently introduces well-developed characters, vivid setting, and an engaging initial conflict, establishing a coherent narrative framework.</p> <p><b>Development (middle): 1pt</b></p> <p>Progresses the storyline logically with rising action, featuring complex conflicts (Ex: internal and external struggles/obstacles) and resolutions.</p> <p><b>Resolution (end): 1pt</b></p> <p>Concludes the story while offering satisfying closure and conflict settlement while reinforcing fundamental themes or messages.</p>	<p><b>Initiation (beginning): 0.75pt</b></p> <p>Effectively presents the characters, setting, and initial conflict adequately, establishing the foundation for the story.</p> <p><b>Development (middle): 0.75pt</b></p> <p>Progresses the storyline with a certain clarity, though lacking conflicts' or resolutions' depth or complexity.</p> <p><b>Resolution (end): 0.75pt</b></p> <p>Concludes the story, but providing somewhat underdevelopment closure compared to an excellent performance.</p>	<p><b>Initiation (beginning): 0,5 pt</b></p> <p>begins the story by introducing characters and setting, but initial conflict may lack clarity or engagement</p> <p><b>Development (middle): 0,5 pt</b></p> <p>Progresses the storyline forward but may show some fragmentation or lack of detail regarding conflicts and resolutions.</p> <p><b>Resolution (end): 0,5 pt</b></p> <p>Concludes the story, but with incomplete closure or settlement of conflicts.</p>	<p><b>Initiation (beginning): 0,25pt</b></p> <p>begins the story but lacks precision or depth in presenting characters, setting, or initial conflict.</p> <p><b>Development (middle): 0,25pt</b></p> <p>progresses the storyline but with ambiguity or inconsistency, making it difficult to follow.</p> <p><b>Resolution (end): 0,25pt</b></p> <p>Ends the story abruptly or ineffectively, leaving major conflicts unresolved.</p>	<p>0pts</p> <p>- There is a lack of clear organization apparent. The narrative demonstrates a lack of clear structure or logical consistency.</p>
<b>Language Use</b>  <b>(5pts)</b>	<p><b>Lexical Diversity: 2.5pts</b></p> <p>Demonstrates an outstanding command of vocabulary, employing a wide range of words effectively to convey meaning and evoke vivid imagery.</p> <p><b>Descriptive Clarity: 2.5 pts</b></p> <p>Offers rich descriptions that</p>	<p><b>Lexical diversity: 2pts</b></p> <p>Uses a variety of words to convey ideas and concepts, which enhances the overall depth and complexity of the narrative.</p> <p><b>Descriptive Clarity: 2 pts</b></p> <p>Provides descriptions that vividly depict a scene for the reader,</p>	<p><b>Lexical Diversity: 1.5 pts</b></p> <p>Demonstrates some variation in word choice, however occasional reliance upon repetitive language may be detected.</p> <p><b>Descriptive Clarity: 1.5 pts</b></p> <p>Provides descriptions that communicate</p>	<p><b>Lexical Diversity: 0.5 pt</b></p> <p>Demonstrates limited vocabulary, leading to the use of repetitive or monotonous language.</p> <p><b>Descriptive Clarity: 0.5 pts</b></p> <p>Offers descriptions that are ambiguous or unclear, impeding</p>	<p><b>Lexical Diversity:</b></p> <p>The language is deficient in terms of clarity and diversity.</p> <p><b>Descriptive Clarity:</b></p> <p>The descriptions are unclear and vague.</p>

	improve comprehension and involvement with the story.	though lacking some detail or precision.	fundamental imagery, but may lack richness or detail.	reader comprehension	
<b>Coherence (4pts)</b>	<p><b>Narrative flow: 2pts</b> Maintains a consistent and logical progression of events, enhancing reader comprehension and engagement in the story.</p> <p><b>Structural Integrity: 2pts</b> Ensures that every component of the paragraph serves a central topic, idea, or purpose. Constructing a unified and cohesive storyline.</p>	<p><b>Narrative flow: 1pt</b> Maintains a mostly continuous progression of events, with slight disruptions that do not significantly impede reader understanding.</p> <p><b>Structural Integrity: 1pt</b> Most components of the paragraph are focused on a central theme or idea, which generally helps to create a sense of cohesion and unity in the storyline.</p>	<p><b>Narrative flow: 0.5pts</b> Displays a fragmented sequence of events and occasional abrupt or unrelated transitions, necessitating frequent efforts from the reader to ensure comprehension of the overall storyline.</p> <p><b>Structural Integrity: 0.5pts</b> While certain components of the paragraph serve the major theme or purpose, others may appear irrelevant, thereby affecting the overall coherence.</p>	<p><b>Narrative Flow: 0.25pts</b> Displays a fragmented sequence of events, characterized by numerous disruptions that impede the reader's understanding of the story.</p> <p><b>Structural Integrity: 0.25pts</b> Several components of the paragraph fail to serve the central theme or purpose, leading to an incoherent storyline.</p>	<p><b>Narrative Flow:</b> Displays a highly fragmented and incomprehensible sequence of events, resulting in reader confusion and disinterest.</p> <p><b>Structural Integrity:</b> The components of the paragraph fail to contribute to a central topic or purpose, resulting in a complete absence of coherence and unity.</p>
<b>Conventions (5pts)</b>	<p><b>5pts</b> Demonstrates exceptional mastery of grammar, spelling, and punctuation conventions, with minimal, if any, mistakes that do not diminish the readability or coherence of the story.</p>	<p><b>4pts</b> Demonstrates general proficiency in grammar, spelling, and punctuation conventions, with a few minor mistakes that do not greatly affect the clarity of the story.</p>	<p><b>3pts</b> Demonstrates incompatible mastery of grammar, spelling, and punctuation conventions, with noticeable errors that could hinder readability in certain parts.</p>	<p><b>2pts</b> Demonstrates a limited command of grammar, spelling, and punctuation conventions, characterized by numerous errors that diminish the readability and coherence of the story.</p>	<p><b>0.25</b> Displays inadequate mastery of grammar, spelling, and punctuation conventions, with numerous errors that greatly hinder the clarity and comprehension of the content.</p>
<b>Creativity (3pts)</b>	<p><b>Originality: 3pts</b> Offers exceptionally original, inventive and captivating storytelling techniques that differ from predictable plot twists. <b>Innovative features:</b> Incorporates highly creative—such as non-linear frameworks (ex:</p>	<p><b>Originality: 2 pts</b> Demonstrates originality in narrative, presenting unique story elements or perspectives, while occasionally relies on familiar conventions. <b>Innovative features:</b> Incorporates fairly inventive features that enrich the storytelling experience, but may</p>	<p><b>Originality: 1.5pt</b> Demonstrates a limited level of creativity in storytelling, as the narrative elements frequently appear somewhat unoriginal, predictable, or dependent on conventional patterns. <b>Innovative</b></p>	<p><b>Originality: 1 pt</b> Demonstrates a lack of creativity in storytelling, excessively depending on formulaic techniques (overused/predicted storytelling), or unoriginal concepts. <b>Innovative features:</b> Lacks</p>	<p><b>Originality: 0.25 pts</b> No creativity is evident in storytelling.</p> <p><b>Innovative features:</b> No originality and innovative elements apparent in the storyline.</p>

	flashbacks), unique stylistic choices (Ex: second person narration), or symbolic/metaphorical strategies.	lack depth or full incorporation.	<b>features:</b> Contains a limited number of remarkable creative aspects that only slightly improve the originality or level of engagement of the narrative.	originality and incorporates little to no creative elements, leading to an ordinary and conventional storyline. (traditional sequencing of events)	
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**Thesis:** “Using Digital Storytelling To Enhance Students’ Narrative Writing Performance -The Case Of Second Year Lmd Students At Hassiba Benbouali University Of Chlef”

**Author:** Asmaa BELDJENNA

**Supervisor:** Leila KARA MOSTEFA BOUSSENA

### **Abstract**

This study examines the influence of Digital Storytelling (DST) on the writing performance of second-year undergraduate students of English at Hassiba Ben Bouali University in Algeria. The study adopted a Solomon four-group design, with a total of 100 students equally distributed among four groups. Additionally, 44 teachers voluntarily completed an attitude survey on DST’s implementation. The study intended to assess the impact of DST on students’ narrative writing performance, explore its capacity to cultivate an effective learning atmosphere, and investigate attitudes on its incorporation in Algerian higher education. Statistical tests such as analysis of variance ANOVA, analysis of covariance ANCOVA and an independent sample t test were conducted to investigate the effects of the pretest and treatment. The results demonstrated that the experimental groups outperformed the control groups in narrative writing, with significant improvements in organization, language use, conventions, and creativity. Observational data validated the efficacy of DST as an effective teaching tool, while also highlighting areas of improvements. Both teachers and students held positive attitudes towards the implementation of DST in writing classrooms. This study provides valuable information for educators and policymakers who are contemplating the incorporation of digital technologies into teaching languages for an effective and meaningful learning environment.

**Keywords:** Algerian Higher Education, Digital Storytelling, English Language Teaching, Narrative Writing performance, Solomon Four-Group Design, Technology Integration, Writing Instruction.

**Thèse:** L' utilisation de la narration numérique pour améliorer le performance d'écriture narrative des élèves. Le cas des étudiants de deuxième année à l'Université Hassiba Ben Bouali.

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### **Résumé**

L'étude se penche sur l'effet de la narration numérique sur les compétences en rédaction narrative des étudiants de deuxième année du département d'anglais à l'Université Hassiba Ben Bouali en Algérie. La recherche s'est basée sur une méthodologie qui a impliqué l'utilisation de quatre groupes de Solomon, avec un échantillon total de 100 étudiants répartis de manière équitable entre les quatre groupes. En outre, 44 enseignants ont volontairement pris part à une enquête sur leurs attitudes. L'objectif de la recherche était d'analyser l'impact de la narration numérique sur les compétences en rédaction narrative, d'examiner sa capacité à favoriser un environnement d'apprentissage productif, et d'étudier les perceptions concernant son intégration dans l'enseignement supérieur en Algérie. Des tests d'analyse de variance (ANOVA), ainsi qu'une analyse de covariance (ANCOVA) est un t test Independent ont été employés afin de distinguer les impacts du pré-test et du traitement. Les résultats de l'étude ont mis en évidence une supériorité des groupes expérimentaux par rapport aux groupes de contrôle en ce qui concerne la rédaction narrative, avec des améliorations notables observées dans les domaines de l'organisation, de l'expression linguistique, des conventions et de la créativité. Les observations ont confirmé que la narration numérique est un outil pédagogique performant, tout en identifiant les domaines nécessitant des améliorations. Les enseignants et les étudiants ont exprimé un avis favorable à l'intégration de la narration numérique dans les cours d'écriture. Cette recherche apporte des données essentielles aux professionnels de l'éducation et aux responsables politiques qui envisagent d'incorporer les outils numériques dans l'enseignement des langues en vue de favoriser un environnement d'apprentissage efficace et pertinent.

**Mots clés :** Compétence en écriture narrative, Enseignement supérieur en Algérie, Enseignement de l'Anglais, intégration des technologies, narration digitale, pédagogie de l'écriture, Plan expérimental de Solomon à quatre groupes.

الأطروحة: استخدام السرد الرقمي لتحسين أداء الطلاب في الكتابة السردية. حالة طلاب السنة الثانية بجامعة حسبية بن بو علي

المؤلف: أسماء بلجنة المشرف: ليلي قارة مصطفى بوسنة

#### الملخص

تبحث هذه الدراسة تأثير السرد الرقمي على أداء الكتابة لدى طلاب السنة الثانية في جامعة حسبية بن بو علي في الجزائر. اعتمدت الدراسة تصميم مجموعة سولومون الرباعية، بمجموع 100 طالب موزعين بالتساوي على أربع مجموعات. بالإضافة إلى ذلك، أكمل 44 معلماً استبياناً عن مواقفهم تجاه ادماج السرد الرقمي في فصول الكتابة. تهدف الدراسة إلى تقييم تأثير السرد الرقمي على أداء الكتابة السردية، واستكشاف قدرته على تعزيز بيئة تعلم فعالة، والتطلع على مواقف التلاميذ و الاساتذة تجاه إدماجه في التعليم العالي الجزائري. تم استخدام اختبارات تحليل التباين المشترك ; و تحليل التباين المصاحب و اختبارات لعينتين مستقلتين و ذلك للتمييز بين آثار الاختبار القبلي والمعالجة. أظهرت النتائج أن المجموعات التجريبية تفوقت على المجموعات الضابطة في الكتابة السردية، مع تحسينات كبيرة في التنظيم، واستخدام اللغة، واتقان القواعد و الاملاء و علامات الترقيم ، والابداع. أكدت البيانات الرصدية فعالية السرد الرقمي كأداة تدريس فعالة، مع تسليط الضوء أيضا على مجالات التحسين. كانت مواقف المعلمين والطلاب إيجابية تجاه تطبيق السرد الرقمي في فصول الكتابة. توفر هذه الدراسة معلومات قيمة للمعلمين وصانعي القرار الذين يفكرون في إدماج التكنولوجيا الرقمية في تدريس اللغات لتحقيق بيئة تعليمية فعالة وذات معنى

الكلمات المفتاحية: أداء الكتابة السردية، التعليم العالي الجزائري، السرد الرقمي، تصميم مجموعات سولومون الرباعية، تدريس اللغة الإنجليزية، تعليم الكتابة ، دمج التكنولوجيا