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# Effects of Digital Story-telling on Motivation, Critical Thinking, and Academic Achievement in Secondary School English Learners

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**ABSTRACT**
While examining the findings, this study concentrated on academic success, critical thinking, and motivation. for demonstration. Secondary school students studying English are involved in digital story-telling research. A quasi-experimental approach was employed in the research with 48 11th grade students who took pretests and posttests. Teaching as DST in the experimental group and teaching as teaching in the control group were the two degrees of CT-integrated instruction that were used. Gather both quantitative and qualitative information, such as responses to academic questions and the outcomes of tests of English language and cognitive skills. Through the addition of unique cultural narratives with a Palestine focus, the work advances the DST tradition. This program sheds information on how learning outcomes for students are impacted by daylight saving time. Because ANCOVA yields effective and objective results, it was utilized in the data analysis process.

**KEYWORDS**
Quasi-experimental design; digital story-telling; academic success; critical thinking; learning motivation; technology-integrated education; Palestinian culture.

## INTRODUCTION

The landscape of education has undergone profound transformations in response to rapid technological advancements, shaping the dynamic learning environment of the 21st century. With unprecedented access to information and the integration of innovative technologies such as mobile devices, web applications, and social media tools, it is the duty of educators to give pupils the information and abilities they need to succeed in a society that is changing quickly (Malita and Martin, 2010). To accomplish educational goals in this setting, it is crucial to raise information awareness, promote learning motivation, foster positive thinking, by tackling the main issues in education that the 21st Century Skills Partnership (2004) and other scholars have identified**.** To effectively address the demands of modern education, scholars advocate for a balanced approach that combines educational advancements with technological innovations (Koohang 2009). Central to this approach is the integration of social constructivism, which emphasizes collaborative learning in authentic contexts, with technology-integrated instruction (ITII) (Vygotsky, 1978). Recognizing technology as an essential tool for teaching and learning, educators often endorse ITII grounded in social constructivist principles. However, the effective implementation of ITII requires a deep understanding of technology-supported pedagogy (Hughes, 2006). While traditional technology solutions, such as PowerPoint presentations, remain prevalent in classrooms, the advent of powerful and accessible digital tools presents opportunities for innovative teaching and learning approaches (Porter, 2006). Among these approaches, digital story-telling (DST) emerges as a transformative method, leveraging multimedia narratives to foster critical thinking, engagement, and information literacy (Robin, 2005, 2008; Sadik, 2009).

### Digital Story-telling (DST)

With the use of multimedia components including graphics, music, and sound, digital story-telling (DST) combines conventional story-telling methods with contemporary technology to produce individualized stories. DST is known to provide a dynamic learning environment by improving student participation, teamwork, and knowledge presentation (Robin, 2005, 2008; Sadik, 2009). Scholars have investigated the effects of DST on academic accomplishment in academic contexts, especially in language learning environments where oral activities are intimately associated with success (Ellis, 1993; Gomez, 1995; Kim et al., 2021; Marais, 2022; Schank, 1991). Studies indicate that DST can be a useful tool for enhancing listening comprehension, particularly for young children studying English as a second language in elementary school (Tsou, 2006).

### DST and Critical Thinking

In today's information-rich society, critical thinking abilities are crucial for assessing data and coming to well-informed conclusions (Facione, 1990; Sims, 2004). Students actively gather, consider, and analyze information while crafting digital tales, which helps them develop their critical thinking skills. For the best learning results, it is essential to sustain and improve student motivation for learning. By offering relevant, interesting learning opportunities, integrating

technology into the classroom—like DST—can boost student motivation (Jonassen, 2000; Roblyer & Edwards, 2000). This study intends to evaluate the effects of various degrees of IT-integrated instruction, including lecture-style ITII and DST, on students' learning experiences, given the potential of DST to influence academic success, critical thinking, and learning motivation. This study aims to further knowledge of successful technology-supported teaching and its implications for contemporary education by examining these links.

**Research Questions**

We make an effort to respond to the following inquiries using historical data and relevant studies in this domain:

1. How does Digital Story-telling (DST) influence students' academic achievement across various language domains, including listening, reading, and writing?
2. What is the relationship between Digital Story-telling (DST) and students' critical thinking skills, specifically in terms of their ability to identify assumptions, make inferences, draw deductions, interpret information, and evaluate arguments?
3. How does Digital Story-telling (DST) affect students' motivation to learn, as measured by their task value and self-efficacy beliefs in the learning process?

## LITERATURE REVIEW

According to Benmayor (2008), digital storytelling has become a prominent educational technique that presents chances for life-changing educational experiences. According to Benmayor (2008), it fosters critical analysis and creative expression by integrating multimedia components to construct tales. Prior research has demonstrated how digital storytelling may improve information literacy, critical thinking, and student engagement (Robin, 2005; Robin, 2008; Sadik, 2009). Furthermore, there is evidence linking digital storytelling to enhanced academic performance, specifically in language domains like writing, reading, and listening (Tsou et al., 2006). Because it may include students in active learning, digital storytelling has becoming more popular in educational settings. Benmayor (2008) emphasizes how it might provide students possibilities for transformational learning by letting them create tales with multimedia components, which fosters critical thinking and artistic expression. Furthermore, it has been noted that digital storytelling can improve a variety of cognitive abilities, such as information literacy and critical thinking (Robin, 2005; Robin, 2008; Sadik, 2009). These studies highlight the ways in which digital storytelling stimulates students' critical thinking and deep engagement with complicated concepts given in multimedia formats. Additionally, Tsou et al. (2006)'s research offers empirical proof of the beneficial effects of digital storytelling on academic attainment, especially in language domains. Their study demonstrates how learners' listening, reading, and writing skills may be enhanced by digital storytelling interventions. Digital storytelling produces dynamic learning experiences that accommodate a range of learning preferences and styles by combining multimedia elements including text, voice, and images. Furthermore, research indicates that digital storytelling might help students develop their

communication and teamwork abilities (Maier & Fisher, 2006; Mpiti et al. 2023). Digital storytelling projects are collaborative in nature, which promotes teamwork, idea sharing, and helpful criticism among students and builds a feeling of community in the classroom. The literature now in publication highlights the many advantages of digital storytelling in the classroom. Digital storytelling is a dynamic pedagogical strategy that has the potential to increase students' learning experiences in a variety of educational contexts, from improving academic accomplishment to fostering critical thinking and collaborative abilities.

## THEORETICAL FRAMEWORK

The theoretical framework guiding this study draws upon key principles of social constructivism, technology-integrated instruction (ITII), and digital story-telling (DST) to elucidate the complex interplay between pedagogy, technology, and learning outcomes in the 21st-century educational landscape.

### *Social Constructivism*

Rooted in the work of Vygotsky and Cole (1978), social constructivism posits that learning occurs through active engagement in authentic tasks within social contexts. According to this theory, knowledge is constructed collaboratively as individuals interact with their environment and with others. Social constructivism emphasizes the importance of scaffolding, peer interaction, and real-world application of knowledge, fostering deeper understanding and meaning-making.

### *Technology-Integrated Instruction*

Building upon the principles of social constructivism, ITII emphasizes the strategic integration of technology into instructional practices to enhance learning experiences. Hughes (2006) categorizes technology-supported teaching into three levels: replacement, amplification, and transformation. While replacement involves using technology as a substitute for traditional instructional methods, amplification entails enhancing existing practices through technology. Transformation, the highest level, involves fundamentally redefining teaching and learning processes through innovative uses of technology. By leveraging ITII based on social constructivist principles, educators can create dynamic, interactive learning environments that promote collaboration, creativity, and critical thinking.

### *Digital Story-telling*

DST emerges as a powerful tool for implementing ITII and fostering social constructivist learning experiences. Porter (2006) describes DST as a multimedia approach that combines visual, auditory, and narrative elements to create compelling narratives. Research by Robin (2005) and Sadik (2009) demonstrates the effectiveness of DST in enhancing student engagement, critical thinking, and information literacy. By engaging students in the creation of digital stories, DST encourages active participation, collaboration, and reflection, aligning with the principles of social constructivism. Furthermore, DST facilitates the transformation of traditional teaching practices by providing opportunities for students to construct knowledge, express creativity, and develop digital literacy skills.

***Integration of Theoretical Perspectives***

The theoretical framework of this study integrates social constructivist principles with ITII and DST to examine how different levels of technology integration impact student learning experiences. By exploring the effects of lecture-style ITII and DST on academic achievement, critical thinking, and learning motivation, this study seeks to contribute to the understanding of effective technology-supported pedagogy in the modern educational context. Additionally, by examining the synergistic relationship between technology, pedagogy, and learning outcomes, this research aims to inform educational practices that promote student engagement, collaboration, and success in the 21st century.

**Purpose of the study**

Even though teachers are frequently urged to use social constructivist-based Information Technology-Integrated Instruction methodologies to support effective learning, many still have difficulties incorporating technology into routine classroom activities. Technology is frequently used in oversimplified ways that just enhance or replace current practices. This points to a lack of training for instructors in creating transformative technology pedagogy, which results in a lack of expertise in matching technology tools and instructional materials to course content. This study compares teaching strategies that take into account students' experiences and learning in the classroom in order to examine the differences between digital story-telling (DST) and ITII-based courses. The present study is primarily concerned with examining the following inquiries:

- Are there learning differences between subjects taught at different levels?
- Are there differences in thinking skills between subjects taught at different levels?
- Are there differences in learning support between classes taught at different levels?

## PREVIOUS STUDIES

Digital storytelling in education has been the subject of several research in the past. For instance, a study conducted in 2006 by Tsou et al. examined the beneficial effects of digital storytelling on the language acquisition of Taiwanese youngsters. Similar to this, Verdugo and Belmonte (2007) investigated how multimedia annotation affected the process of teaching and learning English as a foreign language (EFL), showing how it may improve language learning results. Additionally, Koohang et al. (2009) looked at constructivism with e-learning, highlighting how crucial it is to include technology into constructivist learning settings. In a research on Taiwanese children's English language learning, Tsou et al. (2006) discovered that digital storytelling significantly improved language acquisition. Students were able to enhance their English language proficiency—particularly in speaking and listening—by participating in digital tales. This study emphasizes how successful digital storytelling is as a teaching tool for language acquisition. Verdugo and Belmonte (2007) looked at how multimedia annotation affected the process of teaching and learning English as a foreign language. According to their research, including multimedia annotation into language teaching improved students' understanding and

memory of English vocabulary and grammar. This shows that by offering contextualized and aesthetically appealing information, digital storytelling, with its multimedia components, may aid in language learning. Furthermore, Koohang et al. (2009) investigated the relationship between constructivism and e-learning, highlighting the contribution of technology to the advancement of dynamic, learner-centered teaching methods. Their study made clear how crucial it is to match technology with constructivist ideas in order to design effective learning experiences. This blending of technology with constructivist teaching is best demonstrated by digital storytelling, which places a strong focus on student participation, creativity, and teamwork. Building on these discoveries, new research published in the OpenED Network Journals has improved our comprehension of the educational value of digital storytelling. Kim and Jia (2020), for instance, looked at the usage of interactive digital storytelling platforms in primary school classes and found that they might improve student involvement and creativity. In a similar vein, augmented reality storytelling was investigated and shown to be beneficial in raising students' language competency and cultural awareness in research conducted by Lee et al. (2020).

When taken as a whole, these works advance our knowledge of the theoretical foundations and real-world applications of digital storytelling in education. They highlight how digital storytelling may improve language learning results, encourage student participation, and support constructivist teaching methods. Digital storytelling is still a useful tool for producing immersive and interactive learning experiences as educators look for new ways to teach and learn.

## METHOD

### Research Design

The aforementioned study issues were investigated using a pretest and posttest quasi-experiment design with an experimental group and a comparison group. Figure 3 depicts the study design.

### Participants

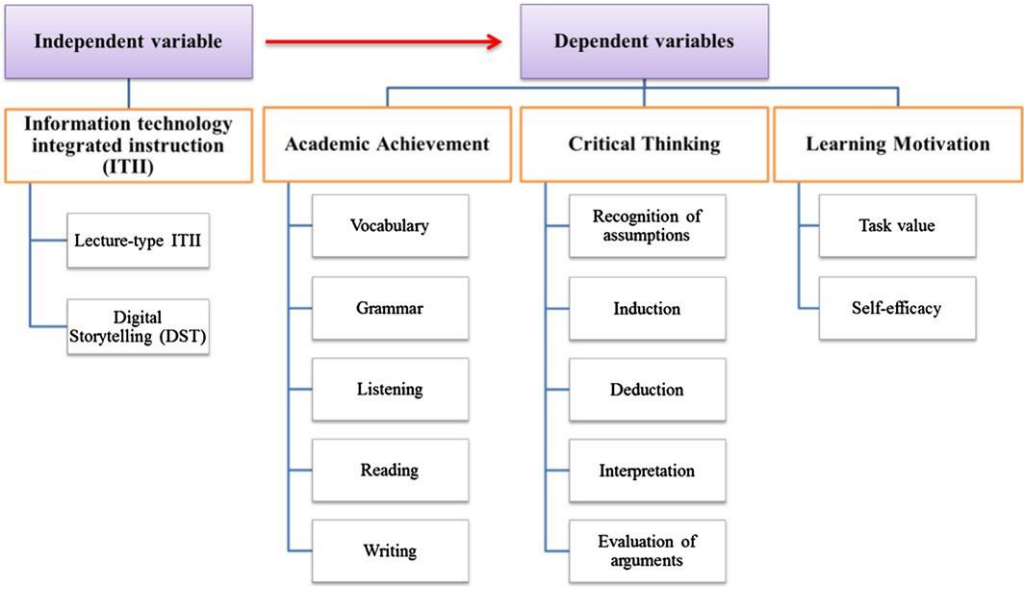
A total of 48 participants were enlisted from two 11th-grade English classes at a comprehensive senior high school in Palestine. Entrance exam results for both classes indicated scores below the national average. The gender distribution was approximately 1:2, with a higher representation of female students. Both classes adhered to the same curriculum, had the same instructor, followed a similar schedule, and underwent identical examinations. However, they were instructed using two distinct strategies. The comparison group comprised 25 students taught with Information Technology-Integrated Instruction, while the experimental group consisted of 23 students taught using Digital Story-telling (DST). The students were further organized into eight heterogeneous groups, each comprising five individuals, based on their proficiency in English.

***Independent variable***

The study's primary independent variable is the instructional approach used, which is divided into two levels: Digital Storytelling (DST) for the experimental group and Information Technology Integrated Instruction (ITII) for the control group. For the most part, conventional lectures are used by teachers in the ITII-based courses to impart information using technology such as computers, projectors, and presentation software. When it comes to homework and examinations, students usually study alone, but they do occasionally take part in group discussions. Students in the experimental group, on the other hand, actively contribute to the development of the DST program. In order to create digital stories, students must create instructional projects that incorporate their own voice with music, graphics, and sound. Students are directed through the four steps of DST—planning, scripting, creating, and publishing—to develop their digital tales once the course topic is introduced. Table 1 provides a thorough analysis of the tasks and time allotted for each of the two ITII levels.

**Figure 1.**

*Research design*




***Dependent variables***

Three important criteria were examined in this study to evaluate students' willingness to learn in a Palestinian setting, their ability to think critically, and their progress in learning the English language. The English Achievement Test (EAT) assesses students' competency in a variety of English language domains. It was created cooperatively by researchers and educators who are acquainted with the educational environment in Palestine. The vocabulary, writing, speaking, listening, and reading components make up the five sections of the exam, which offers a thorough evaluation of pupils' language proficiency. Assessing critical thinking abilities across five subscales—hypothesis determination, induction, deduction, explanation, and argument evaluation—is the goal of the Critical Thinking Test (CTT-I) Level 1, which has been modified for use with Palestinian students. Each subscale consists of five multiple-choice questions that add up to a total score that represents the critical thinking skills of the pupils. Lastly, learners'

motivation and self-efficacy in the context of learning English are assessed using the Motivation to Learn Questionnaire (MSLQ), which was tailored for Palestinian students. Through the inclusion of items particularly designed for the cultural context of Palestine, these tools seek to offer a more nuanced picture of students' language learning experiences.

**Table 1.**

*Comparing Lecture-style and Digital Storytelling (DST) Groups' Class Activities*

| Class Activities | Comparison Group (Lecture-Style) | Time Allocation | Experimental Group (DST) | Time Allocation |
|---|---|---|---|---|
| Instruction | Instructor provides leading questions. | 5% | Instructor provides leading questions. | 5% |
| | Instructor presents course content with PowerPoint & textbook. Students collaborate on team work. | 75% | Instructor presents course con-tent with PowerPoint & textbook. Students collaborate on DST project (including four phases: pre-production, production, post-production, and distribution). | 70% |
| Student Presentations | Students present their team work. <br> Instructor provides feedback. | 10% | Students present their DST project and post it to the class blog, accessible for a global audience. Whole class provides feedback for the DST presentations. | 10% |

**Table 2.**

*Questions from the two MSLQ subscales.*

| MSLQ Subscales | Task Value: Interest | Task Value: Importance | Task Value: Usefulness | Self-Efficacy |
|---|---|---|---|---|
| Questions | 1. How interested are you in the content area of this course? | 3. How important is it for you to learn the course material in this class? | 5. Do you believe what you learn in this course will be useful in other areas? | 7. How certain are you that you comprehend the most challenging content included in the course readings? |
| | 2. Do you like the subject matter of this course? | 4. How important is understanding the subject matter of this course to you? | 6. Do you find the course material in this class useful for your learning? | 8. How confident are you that you can understand the basic concepts taught in this course? |
| | | | | 9. How confident are you that you can understand the most complex material presented by the instructor in this course? |
| | | | | 10. Do you believe you will receive an excellent grade in this course? |
| | | | | 11. How certain are you that you can master the skills being taught in this course? |

In order to guarantee that assessments correctly reflect the many aspects of English

language acquisition, critical thinking, and motivation among Palestinian students, these instruments were carefully chosen and modified. This improved the validity and reliability of the study's conclusions. Researchers aimed to make sure that the outcomes accurately reflected the difficulties and realities encountered by Palestinian students by coordinating the assessment instruments with Palestine's distinct cultural and educational background. This study attempts to provide important insights into the efficacy of English language education programs and the variables impacting students' learning experiences within the Palestinian setting through the careful customization of these measures.

***Research procedures***

The researchers initiated a sequence of gatherings and dialogues to acquaint educators with the fundamentals of DST-based instruction, optimistic thinking, and technology-assisted teaching tactics before beginning the study processes. Together, the researcher and the teacher created lesson plans and a 10-week program for the first semester. Pre- and post-tests were included in the quasi-experimental design of this study, combining two research teams. Both classes met twice a week for 22 weeks, with 45 minutes spent on each session. Three pre-tests (EAT, CTT-I, and MSLQ) were administered to both student groups at the beginning of the semester. The same three tests were given again at the end of week 22, and then participants in an interview session were required. There were small-group interviews that lasted between 15 and 20 minutes apiece. "Palestinian Folklore" and "History of Palestine," each lasting ten weeks, were the study's assessment subjects. Table 3 offers a thorough summary of the DST assignments given to the experimental group.

***Experimental Group Curriculum:***

Week 1: Introduction and Pretest

- Introduction to Digital Story-telling (DST) Procedures
- Pretest: English Achievement Test (EAT), Critical Thinking Test (CTT-I), and Motivation to Learn Questionnaire (MSLQ)
- Formation and Division of Groups
- Basic Grammar, Vocabulary, and Content
- Display of a Self-Made Digital Story

Week 2: Topic 1: Khaled and Reem (Ws 2–11) - Pre-production Phase

- Discussing Palestinian cultural themes and narratives
- Group discussion on personal experiences related to Palestinian heritage
- Creating a realistic scene based on Palestinian traditions
- Researching Palestinian folklore and selecting a story for DST

Week 3: Topic 1: Script & Peer Review (Part 1) - Khaled and Reem (Ws 2–11)

- Writing the first draft of the script incorporating Palestinian cultural elements
- Peer review of the first draft, emphasizing cultural authenticity
- Revising the script based on peer feedback

Week 4: Topic 1: Khaled and Reem (Ws 2–11) - Part 2 of the script and peer review

- Continued scriptwriting with a focus on preserving Palestinian narratives
- Peer assessment of the updated script for cultural accuracy
- Finalizing the oral screenplay with attention to Palestinian cultural nuances

Week 5: Topic 1: Khaled and Reem (Ws 2–11) - Oral Story-telling and Story Mapping

- Oral storytelling within the groups, incorporating Palestinian storytelling techniques
- Sharing feedback and reflections on oral storytelling, emphasizing cultural significance
- Designing story maps and storyboards that reflect Palestinian culture and heritage

Week 6: Topic 1: Khaled and Reem (Ws 2–11) - Production Phase

- Searching for images and audio relevant to Palestinian folklore and traditions
- Recording additional content that enhances the digital story's Palestinian identity

Week 7: Topic 1: Khaled and Reem (Ws 2–11) - Post-production Phase

- Refining and enhancing multimedia material while preserving Palestinian cultural integrity
- Utilizing software tools such as Microsoft Photo Story 3 to edit digital storytelling

Week 8-9: Topic 1: Khaled and Reem (Ws 2–11) - Distribution Phase

- Uploading completed digital stories to platforms that promote Palestinian cultural heritage
- Engaging in peer review and feedback sessions to support the preservation of Palestinian narratives

Week 10-11: Topic 1: Khaled and Reem (Ws 2–11) - Final Oral Report and Reflection

- Delivering final oral presentations of the digital stories, highlighting Palestinian cultural values
- Sharing reflections on the DST process and the significance of preserving Palestinian heritage
- Concluding the topic with insights into the role of DST in promoting Palestinian cultural identity

Week 12-21: Topic 2: Wael Al Dahdouh - Similar Process Using Microsoft Movie Maker and once-upon-a-bot

- Continuing the DST process with a different software, focusing on maintaining Palestinian cultural authenticity

Week 22: Conclusion and Posttest

- Conducting posttests: EAT, CTT-I, MSLQ, and interviews to assess learning outcomes
- Reflecting on the overall DST experience and its impact on preserving

Palestinian cultural heritage

**Table 3.**

*Descriptive information on English academic achievement.*

| EAT (maximum score) | Comparison group | | | | | Experimental group | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | | Pretest | | Posttest | | |
| | *M* | *SD* | *M* | *SD* | *Adj.M* | *M* | *SD* | *M* | *SD* | *Adj.M* |
| Vocabulary (20) | 9.29 | 3.76 | 14.14 | 4.67 | 14.82 | 10.59 | 4.34 | 16.67 | 2.77 | 15.96 |
| Grammar (20) | 8.39 | 2.92 | 12.82 | 4.17 | 13.98 | 12.48 | 3.27 | 16.67 | 2.88 | 15.47 |
| Listening (20) | 12.05 | 5.46 | 9.73 | 5.43 | 10.29 | 10.65 | 5.32 | 14.26 | 4.99 | 13.68 |
| Reading (20) | 7.68 | 3.14 | 7.61 | 4.75 | 8.75 | 10.67 | 3.30 | 12.93 | 4.34 | 11.74 |
| Writing (20) | 3.14 | 4.40 | 1.76 | 4.03 | 2.35 | 8.86 | 6.08 | 11.29 | 4.72 | 10.68 |
| Total score (100) | 40.55 | 9.88 | 46.06 | 16.16 | 49.93 | 53.25 | 13.17 | 71.81 | 12.74 | 67.80 |

The two sessions had the identical learning objectives: teaching vocabulary, grammar, listening, reading, and writing abilities; moreover, the students were expected to gain familiarity with the Palestinian cause and other pertinent Palestinian cause. On the other hand, the control group was taught both topics by teachers using textbooks and PowerPoint slides. Students debate the issues in the textbook in groups and then write an essay about the subject. Ultimately, they used presentation software to showcase their work in groups. The lecturer taught the identical subjects to the experimental group using PowerPoint slides and textbook readings as well. In contrast to the comparison group, the experimental group members were tasked with working together to create digital stories. Based on how the obligations for the DST-related activities were designed, the students were divided into groups of five individuals. At the start of the first week, the researcher stressed the value of group cooperation. Next, select a staff member to include on the cooperation form (e.g., writer, videographer, and videographer). Students are told that their group engagement will decide their final project grade in order to promote participation.

For the two DST themes, technology utilization was scaffolded. During the first subject, Microsoft Photo Story 3 was utilized with students who knew the basics of editing. Microsoft Movie Maker and once upon a bot was used for topic two, enabling more sophisticated features. The following is a description of a comprehensive teaching approach and DST activity related to subject two, "Wal Al Dadouh." At the start of the semester (week 12), the lecturer goes over the writing, sketching, acting, and video editing tasks for the DST program. The teacher also gave the students access to the digital narrative at home and spent fifteen minutes summarizing the curriculum, grammar, and fundamental ideas. In the thirteenth week, he probed the kids with some open-ended questions on the subject to make sure they grasped the explanation.

Some examples of questions to ask include: "who is Wael Al Dahdouh what

happened to his family?" and "why he kept working as a journalist? "Why not, and why not?" After that, the teacher gave the class scenario: a contest to create a narrative for Wael. Next, the students selected one Palestinian journalist to feature in their digital narrative and used the internet to research the subject.

After week 14, the instructor assumed the position of facilitator, with the students taking on a considerable leadership role and the teacher keeping an eye on each group's development and offering help only when needed. They collaborate one-on-one to identify answers with members. On February 14 and 15, they collaborated on the story's first draft. After receiving input from their friends, they made re-visions to the second draft. On the basis of English, grammar, story-telling, and tale substance, each group offers their observations.

Each group performed their narrative screenplay on stage for around five minutes in week sixteen. After that, they exchanged feedback so that they could make revisions and compose the final manuscript. After that, group members worked together to create storyboards and narrative maps based on the final versions. In week 17, students looked for pictures and music, and then they captured all the multimedia information they need. Following that, they moved on to the post-production stage, One Time Robot and Microsoft Movie Maker may be used to edit narration. Every group ought to share its triumphant narrative on the class blog, wherein the global audience might access it. Before the next sessions, which take place in weeks 18 and 19, they must also watch all seven digital tales and respond to each other's thoughts online.

Every group completed their work from the previous two weeks (20 and 21) and gave a final report on stage. Students are encouraged to share their opinions about the DST program, including any fascinating, thrilling, or upsetting events they may have had as well as any difficulties they overcame. The instructor concludes by giving feedback on each group's performance and providing a summary of the lessons the students have learnt over the previous ten weeks.

**Information and Data Sources**

***Data Collection Instruments:***

1. English Academic Achievement Test (EAT): A standardized test assessing participants' proficiency in English language skills, including vocabulary, grammar, listening, reading, and writing. The test consists of multiple-choice and open-ended questions.
2. Critical Thinking Test (CTT-I): A validated instrument measuring participants' critical thinking skills, including the ability to analyze arguments, make inferences, and evaluate evidence. The test comprises scenarios and questions requiring analytical reasoning.
3. Motivated Strategies for Learning Questionnaire (MSLQ): A self-report questionnaire gauging participants' motivational beliefs and learning strategies. The questionnaire covers aspects such as task value, self-efficacy, and metacognitive regulation.

***Sources of Data:***

1. Pretest and posttest data: To assess changes in English learning, cognitive capacity, and motivation before and after the intervention, pretest and posttest scores of the EAT, CTT-I, and MSLQ will be gathered.
2. intervention.
3. Observational Data: Observations of participants' engagement, collaboration, and performance during the digital story-telling activities will be recorded by the researcher throughout the intervention period.
4. Digital Story-telling Projects: Completed digital story-telling projects created by participants will serve as artifacts of their learning and creative expression. These projects will be assessed for content quality, multimedia integration, and story-telling effectiveness.
5. Homework Assignments: Comments and reflections provided by participants on their peers' digital story-telling projects as part of their homework assignments will offer insights into their perceptions and evaluations of the projects.
6. Interviews: Semi-structured interviews conducted with participants at the end of the study will elicit qualitative data on their experiences, challenges, and perceived benefits of engaging in digital story-telling activities.
7. Classroom Observations: The researcher will conduct observations of classroom dynamics, interactions, and instructional practices during the digital story-telling sessions to supplement data collected through other instruments.

***Data Analysis:***

Both qualitative and quantitative data were gathered for this study. The pro-cedures, standard deviations, and correction techniques of three tests (EAT, CTT-I, and MSLQ) between the two groups were described using statistical data. Following a 22-week training period, the two study groups' final academic performance were compared using analysis of variance (ANCOVA), with the estimated scores of the EAT, CTT-I, and MSLQ acting as a covariate to reduce the impact of earlier estimations. variations in the outcomes. Covariance analysis in many variables

**Table 4.**

*ANCOVA test results for English language learning.* Results of the English language acquisition ANCOVA test.

| *SV* | *SS*$^0$ | *Df* | *MS*$^0$ | *F* | *p* |
|---|---|---|---|---|---|
| Pretest- EAT | 560-.38 | 1.00 | 5602.38 | 34.50 | .00* |
| Between- (Group) | 6727.71 | 1.00 | 6727.71 | 41.43 | .00* |
| Within -(Error) | 17373.36 | 107.00 | 162.37 | | |
| Total | 420220.00 | 110.00 | | | |
| Corrected -total | 41194.10 | 109.00 | | | |

*$p < .05$.

## RESULTS AND DISCUSSION

Both qualitative and quantitative data were gathered for this study. The procedures, standard deviations, and correction techniques of three tests (EAT, CTT-I, and MSLQ) between the two groups were described using statistical data. Following a 22-week training period, the two study groups' final academic performance were compared using analysis of variance (ANCOVA), with the estimated scores of the EAT, CTT-I, and MSLQ acting as a covariate to reduce the impact of earlier estimations.

**Table 5.**

*ANCOVA summary table for English academic -achievement.* The ANCOVA summary table displays academic success in English.

| SV | $SS^0$ | Df | $MS^0$ | F | p |
|---|---|---|---|---|---|
| Pretest- EAT | 5602.38 | 1.00 | 5602.38 | 34.50 | .00* |
| Between -(Group) | 6727.71 | 1.00 | 6727.71 | 41.43 | .00* |
| Within-(Error) | 17373.36 | 107.00 | 162.37 | | |
| Total | 420220.00 | 110.00 | | | |
| Corrected -total | 41194.10 | 109.00 | | | |

**Academic achievement in English**

After adjusting for pre-existing differences, the ANCOVA summary table for academic success in English shows a substantial impact on posttest scores from both group differences and pretest scores. Significant variability in posttest scores is shown in both pretest scores (SS = 5602.38, F = 34.50, p <.05) and between-group differences (SS = 6727.71, F = 41.43, p <.05). These results imply that instructional interventions, as shown by group differences, and pre-existing proficiency levels, as assessed by pretest scores, both have a major impact on students' eventual academic success in English. The null hypothesis is refuted by the substantial F-values and the corresponding p-values, which show that it is improbable that the observed effects are the result of chance. As such, the findings emphasize how crucial it is to take into account both pre-existing disparities and instructional interventions when assessing the consequences of academic attainment.

**Table 6.**

*Comparison of English Academic Achievement Subscales Post-hoc*

| Sub-scales | Comparison -of groups | Mean difference | 95% Confidence interval | | Direction -of difference |
|---|---|---|---|---|---|
| | | | Lower bound | Upper bound | |
| Vocabulary- | E–C | 1.14 | —.70 | 2.98 | E = C |
| Grammar- | E–C | 1.49 | —.15 | 3.13 | E = C |
| Listening | E–C | 3.40* | .76 | 6.04 | E > C |
| Reading | E–C | 3.00* | .82 | 5.17 | E > C |
| Writing | E–C | 8.33* | 6.10 | 10.56 | E > C |

*p < .05.

Significant differences between the experimental (E) and comparative (C) groups are seen in the post hoc comparison table for a number of academic success subscales in English. The experimental group surpasses the comparative group in hearing (mean difference = 3.40, p <.05), reading (mean difference = 3.00, p <.05), and writing (mean difference = 8.33, p <.05), but no significant differences are identified in vocabulary or grammar. When compared to conventional teaching techniques, these findings highlight how successful the experimental intervention was in improving students' listening, reading, and writing abilities.

**Table 7.**

*Descriptive- statistics for critical thinking.* Descriptive statistics to support analytical thought

| CTT-I (maximum score) | Comparisongroup | | | | | Experimentalgroup | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | | Pretest | | Posttest | | |
| | M | SD | M | SD | Adj.M | M | SD | M | SD | Adj.M |
| Recognition -of assumptions (5) | 4.20 | .82 | 4.30 | .74 | 4.30 | 4.17 | .72 | 4.33 | .64 | 4.33 |
| Induction (5) | 3.86 | 1.09 | 4.00 | .91 | 4.00 | 3.87 | 1.03 | 4.19 | .85 | 4.19 |
| Ded-uction (5) | 4.14 | .88 | 4.11 | 1.00 | 4.12 | 4.13 | .87 | 4.33 | .73 | 4.32 |
| Inte-rpretations (5) | 3.32 | 1.18 | 3.46 | 1.22 | 3.42 | 3.02 | 1.16 | 3.83 | .93 | 3.88 |
| Evaluation -of arguments (5) | 2.48 | 1.13 | 2.48 | 1.25 | 2.46 | 2.17 | 1.09 | 3.28 | 1.12 | 3.30 |
| Total score (25) | 18.00 | 3.21 | 18.36 | 3.04 | 18.22 | 17.35 | 2.66 | 19.96 | 2.29 | 20.11 |

Table 6 provides descriptive data for critical thinking abilities as determined by the CTT-I. For both the comparison and experimental groups, the table presents a thorough summary of critical thinking measures. It includes subscales for identifying assumptions, induction, deduction, interpretations, evaluating arguments, and overall scores. For every subscale, modified means as well as the means from the pretest and posttest are provided, together with standard deviations. In general, the experimental group outperforms the comparison group in terms of mean scores on all subscales, suggesting that critical thinking skills may increase after the intervention. The experimental group exhibited noteworthy gains in mean scores from the pretest to the posttest, indicating the efficacy of the intervention in promoting critical thinking abilities. These results are consistent with the subsequent ANCOVA results (Table 9), which show a statistically significant difference in the two groups' critical thinking scores.

**Table 8.**

*ANCOVA summary -table for critical- thinking.* ANCOVA critical thinking summary table.

| SV | SS' | Df | MS' | F | p |
|---|---|---|---|---|---|
| Pretest -CTT-I | 178.13 | 1.00 | 178.13 | 31.42 | .00* |
| Between- (Group) | 96.77 | 1.00 | 96.77 | 17.07 | .00* |
| Within -(Error) | 606.65 | 107.00 | 5.67 | | |
| Total | 41176.00 | 110.00 | | | |
| Corrected -total | 855.67 | 109.00 | | | |

*p < .05.

The DST team will benefit from translation because of the nature of the story-telling work, which calls for writers to compose a tale and tell others about the events they have depicted (Sims, 2004). Assist students in crafting a cohesive digital narrative by using a

storyboard (refer to Figure 1). Collaborating to write articles and create storyboards enhances participants' comprehension of the significance of certain texts. The DST team will benefit from translation because of the nature of the story-telling work, which calls for writers to compose a tale and tell others about the events they have depicted (Sims, 2004). Assist students in crafting a cohesive digital narrative by using a storyboard (refer to Figure 1). Collaborating to write articles and create storyboards (refer to Figure 2) enhances participants' comprehension of the significance of certain texts.

In the context of Palestinian culture, Digital Story-telling (DST) served as a platform for fostering decision critical reflection, encouraging students to interpret cultural elements and make thoughtful choices in their narratives. For instance, during the creation of digital stories based on Palestinian traditions, students were tasked with envisioning cultural events or activities for potential participants.

One group, focusing on a Palestinian cause ceremony, incorporated decision critical reflection into their narrative. The narration developed for their digital story is outlined below: "Narrator: As you join us in the vibrant celebration of a Palestinian cause, you'll witness the lively 'Dabke Dance Zone' we've prepared. This decision reflects our cultural pride, as the Dabke dance holds immense significance in our weddings, symbolizing unity and joy for our community."

In this scenario, the DST approach not only allowed for the creative representation of cultural practices but also prompted students to critically reflect on the cultural relevance and significance of their chosen elements. By making decisions rooted in their cultural heritage, students deepened their understanding of Palestinian traditions and honed their interpretative and decision-making skills.

Incorporating peer review into the DST process played a pivotal role in enhancing students' proficiency in scrutinizing arguments. Engaging in DST demanded extensive peer interaction as they refined their narratives, thereby refining their ability to comprehend and evaluate arguments. This aligns with findings from prior studies (Benmayor, 2008), emphasizing the connection between critical thinking, compelling Story-telling, and character decision-making. DST group participants not only improved their skills in assessing the information presented by them during the drafting stage but also enhanced their capability to evaluate diverse information sources and perspectives within a group setting through participating in peer assessments of project presentations from other groups. Through an interactive process of negotiating ideas, they collaboratively identified arguments or propositions that harmonized with their narratives. The participants offered feedback, suggestions, and justifications for their recommendations after a thorough examination of the scripts and presentations of other groups. For instance, in the scenario mentioned earlier, the Palestinian symbols groups sought more detailed justifications from the Palestinian landmarks group regarding the proposed activities, and the latter responded with specific suggestions. This interactive peer review

process facilitated the improvement of both reviewers' and presenters' abilities to analyze and evaluate arguments in the context of Palestinian culture.

**Table 9.**

*Post-hoc comparisons for critical thinking subscales*

| Subscales | Comparison groups | -Mean difference | 95% Confidence interval | | Direction of difference |
|---|---|---|---|---|---|
| | | | Lower bound | Upper bound | |
| Re-cognition of assumptions | E–C | .03 | —.22 | .28 | E = C |
| Induction | E–C | .19 | —.12 | .51 | E = C |
| De-duction | E–C | .21 | —.12 | .53 | E = C |
| Inte-rpretation | E–C | .46* | .08 | .84 | E > C |
| Evaluation - arguments | E–C | .84* | .39 | 1.29 | E > C |

*p < .05.

**Table 10.**

*Descriptive statistics to support the incentive to study.*

| MSLQ (maximum score) | Comparisongroup | | | | | Experimentalgroup | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | | Pretest | | Posttest | | |
| | M | SD | M | SD | Adj.M | M | SD | M | SD | Adj.M |
| Task value (36) | 26.23 | 4.05 | 25.09 | 4.54 | 25.67 | 28.54 | 3.37 | 29.43 | 3.83 | 28.83 |
| Self-efficacy (30) | 16.61 | 3.80 | 17.61 | 4.50 | 18.28 | 18.56 | 4.16 | 20.57 | 3.92 | 19.88 |
| Total score (66) | 42.84 | 6.72 | 42.70 | 7.90 | 44.01 | 47.09 | 6.20 | 50.00 | 6.80 | 48.64 |

Results from quantitative data were triangulated using interview data. The subsequent passages emphasize the significance of the peer review procedure (internal; refer to S3 and external; refer to I and S4) in the growth of cognition and the significance of cognitive phobia:
I: Researching science requires time. Peer analysis fills a gap in English writing classrooms by assisting students in assessing the strengths and flaws of others.
S3: "Exploring a topic related to Palestinian culture was captivating. We delved into various aspects of our culture and brainstormed activities that could authentically represent our traditions. It was crucial for the activities to resonate with our cultural values and make sense in the context."
S4: "Providing feedback on others' scripts posed challenges. While I could identify issues, it was crucial to articulate the reasons to the groups. This helped them in revising the script to ensure it became more culturally relevant and authentic."

Although the DST group did not substantially outperform the comparison group on the other three critical thinking subscales (i.e., recognition of assumptions, inductions, and deductions), both groups scored better than 4.00 on these two sub-scales on the pretest - posttest (refer Table 8). There could not have been much possibility for advancement because each subscale could only receive a score of 5. Given that the findings showed how well technology-enhanced instruction raised students' ability to recognize assumptions and draw

conclusions, more sensitive assessments of inductive and deductive reasoning abilities or more detailed training in inductive reasoning may be necessary to get superior results. In order to promote induction, future DST activities may be created where students are required to finish a tale and base their judgments on the facts presented before.

Table 9 summarizes descriptive statistics including means, standard deviations, and adjusted means for learning motivation, measured by the MSLQ. The mean scores of the experimental group were higher than those of the comparison group on both the pretest and posttest. The results obtained by ANCOVA indicated a significant difference in the total scores for learning motivation between these two groups, $F(1,107) = 13.87$, $p = .00$, partial $\eta^2 = .11$ (see Table 10).

Furthermore, Wilks' fl =.86, F(2, 105) = 8.36, p =.00, ANCOVA findings demonstrated a significant difference in the posttest ratings of the two MSLQ subscales between the two research groups. As a result, as a follow-up test, the Bonferroni confidence interval was examined (Tables 14 and 15 show that E and C denote the experimental and control groups, respectively). Significant variations in task costs and self-efficacy between the two research groups were shown by post hoc comparisons. Students are engaged and involved in the process of developing and releasing digital tales in a rich multimedia classroom.

Real-world experiences that are relevant to the students' experiences are provided via DST (Jonassen, 2000; Pintrich & Schunk, 2002). In terms of the work's worth, students stated that they could apply the abilities they learned in DST projects to other subjects, such computer and painting studies. All story-telling programs need students to utilize technology to choose, arrange, and display multimedia content in order to support the story and learning objectives. Students' media and digital abilities are developed as a result (EDUCAUSE Learning Initiative, 2007).

Learning English turned into a worthwhile endeavor for the pupils when they used it to create digital stories. Furthermore, by working in a collaborative setting, students were able to acknowledge their own contributions to the group's overall work—a genuine and meaningful published story—while still concentrating on their particular responsibilities within the group. However, the comparison group did not see a discernible increase in student motivation as a result of the deployment of technology for the purposes of replacement and amplification, which did not change the instructional goals/tasks.

Regarding self-education, DST participants are motivated to do their best work since they are aware that others will read their tales online, which enhances their interests and abilities (Standley, 2003). Constructivism holds that students take ownership of their education, respond at their own speed, and participate in the process when professors serve as facilitators. Students develop self-confidence and think they can succeed in these difficult challenges as they work together to finish the digital tale.

**Table 11.**

Learning motivation table for ANCOVA summary.

| | SS' | Df | MS' | F | p |
|---|---|---|---|---|---|
| Pretest- MSLQ | 1791.16 | 1.00 | 1791.16 | 46.83 | .00* |
| Between -(Group) | 530.50 | 1.00 | 530.50 | 13.87 | .00* |
| Within -(Error) | 4092.68 | 107.00 | 38.25 | | |
| Total | 242971.00 | 110.00 | | | |
| Corrected -total | 7350.26 | 109.00 | | | |

*p < .05.

Table 10 illustrates the ANCOVA summary table for learning motivation, examining the influence of pretest scores and group differences on posttest scores while accounting for pre-existing differences. The table delineates sources of variation (SS'), such as the pretest scores (Pretest MSLQ) and between-group differences, along with their corresponding degrees of freedom (Df), mean squares (MS'), F-values, and p-values. Both pretest scores (SS' = 1791.16, F = 46.83, p < .05) and between-group differences (SS' = 530.50, F = 13.87, p < .05) demonstrate significant variability in posttest scores. These findings underscore the significant influence of both pre-existing motivational levels and instructional interventions on subsequent learning motivation scores.

**Table 12.**

*Post hoc comparison for subscales of learning motivation***.** Post hoc analysis for learning motivation subscales.

| Subscales | Comparison groups | ofMean difference | 95% Confidence interval | | Direction of difference |
|---|---|---|---|---|---|
| | | | Lower bound | Upper bound | |
| Task value | E–C | 3.16* | 1.62 | 4.70 | E > C |
| Self-efficacy | E–C | 1.60* | .30 | 2.90 | E > C |

*p < .05.

Scholars like Koohang (2009), Neo and Neo (2010), and Pintrich (1999) have highlighted the significance of self-efficacy belief in terms of inspiring pupils to study. While there are certain benefits to using information technology in integrated education, the influence on the student experience is limited due to the absence of technology transfer from the classroom to the students. DST has the capacity to not only provide a tech-enhanced learning and productivity environment, but also to solve problems collaboratively, advance usability concepts, and support learning objectives. These elements support raising students' self-efficacy and enthusiasm in their studies.

Data from interviews were analyzed, and quantitative findings were included. Teachers' and students' feedback indicated that using digital story-telling in the classroom was a great way to promote English: Teacher: "I pushed my kids to learn English. In the classroom, every student

in the experimental group is accountable for their own learning and is subject to the DST process, in contrast to other courses (control group). They take part!

"Student 5: "After my group and I finish the DST tasks, I feel confident." Student 6: "I enjoy writing in English! I'm prepared to rehearse a couple more times to ensure my proficiency. "I want English lessons like this in the future," says student number seven. Compared to how we previously learnt English, this is entirely different.

## RESULTS

A new approach to technology-based education called Digital Story-telling (DST) makes use of cutting-edge tools, economical media, production techniques, and abundant learning opportunities to promote content creation and collaboration. DST has shown to be a valuable method for organizing participant personal tales into genuine learning materials and for encouraging learning. This quasi-experimental study's findings demonstrated that high school students' skill in English, optimistic outlook, and motivation grew considerably during 20 weeks of DST training. The EAT measures of English hearing, reading, and writing, the CTT-I measures of argumentative interpretation and assessment, and the MSLQ measures of performance work value and self-efficacy show this in particular. Positive responses from teacher and student interviews further confirmed DST's promise as a strategy for fostering collaborative second language acquisition in a setting that fosters increased creativity and learning motivation.

Some limitations should be taken into account, even if this work expanded the evaluation of alterations by using an experimental approach. First, even though we were able to use the English self-test to examine changes in English language acquisition across two instructional levels (ITII and DST), external testing validity is limited by the fact that the instrument lacks a model for large samples. What is visible? To get the answers to these issues, we spoke with instructors and students in interviews. Future research endeavors have to contemplate employing a more meticulous approach that leverages standardized tools (like the MSLQ and CTT-I instruments employed in this investigation) to enhance content. measuring results' validity without compromising their usefulness.

Future studies on academic motivation may also take into account additional MSLQ subscales, such goal orientation and academic management views. Future DST research should take into account the importance of qualitative as well as quantitative measurements, as well as the part that learners' emotions and involvement play in the learning process.

The effectiveness of student collaboration in creating and negotiating meaning has been demonstrated by instructional design based on educational change based on the integration of social construction and information technology; however, the nature of this digital narrative (such as external and internal thinking) must be examined. While students with an internal mentality are more likely to be introverted and prefer to learn alone, those with an external mindset are more likely to be curious and enjoy working in groups (Betoret, 2007; Sternberg, 1999). Thus, examining how individual characteristics affect the efficacy of instructional tactics

might assist educators and researchers in adapting collaborative learning and solitary study to better suit the requirements of their students.

The usefulness of DST or other instructional technologies in enhancing critical thinking, problem solving, and other internationally recognized 21st century abilities also need further study. Since our work highlights the potential of DST in a particular setting, one direction for future research is to look at its wider effects on the growth of important abilities in an evolving learning environment.

Individual components of digital description, particularly internal and external thoughts, are worth examining, even though instructional design based on educational change based on social construction and technology integration has demonstrated the effectiveness of student interaction participating in the creation and discussion of the topic. According to Betoret (2007) and Sternberg (1999), students who have an internal viewpoint are often inquisitive and prefer autonomous learning, whereas students who have an outward perspective are typically extroverted and prefer teamwork. As a result, examining how individual differences affect the efficacy of instructional strategies will assist researchers as well as educators in modifying instructional practices (e.g., assigning collaborative work instead of providing instructions for the development of 21st century skills like thinking, problem solving, and global knowledge). Our findings show that daylight saving time has certain benefits in specific situations. Nonetheless, exploring the more extensive impacts of transformational learning on the growth of crucial abilities presents encouraging directions for further study.

Teachers and researchers are urged to boldly construct diverse classrooms with engaging and demanding tactics in order to improve the learning of English as a foreign language utilizing DST. By means of these activities, students will become more motivated and engaged learners, prepared for any necessary future adjustments, and their learning behavior will improve, including their academic performance and drive to study.

## CONCLUSION

This study concludes by highlighting the importance of introducing digital literacy-based intercultural teaching in Palestinian junior high schools, especially considering the obstacles created by incidents such as the battle of Tufan Al Aqsa. In order to improve the knowledge and skills of educators and create a welcoming atmosphere for the variety and cultural values of the Palestinian people, school administrators, teachers, and parents all play critical responsibilities. In addition to events like festivals, museum outings, and cultural arts performances, efforts to include the Palestinian learner profile into lesson plans and curriculum are crucial in helping children develop a respect and knowledge of other cultures. Educators must work hard to help children develop attitudes of equality, cooperation, and cultural awareness. Only then will the school community be able to foster a sense of global variety. Students may study and appreciate multiculturalism on engaging platforms when digital learning tools, such as PowerPoint presentations, movies featuring Palestinian cultural profiles, and pertinent websites, are used.

Nonetheless, issues like signal interference and students' inadequate knowledge of digital learning resources draw attention to the necessity of continuing assistance and training for both teachers and students. It is advised that in the future, educators and school officials work closely together to build an all-encompassing, autonomous curriculum that places a strong emphasis on helping students develop their multicultural identities within the Palestinian context. Schools may support students' overall growth and development as knowledgeable and culturally competent global citizens by encouraging cultural diversity via creative instructional practices and strengthening the Palestinian learner profile.

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