Beyond Textbooks: Engaging Students with Comic Strips Designed in Pixton for Elementary School Students

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Abstract:

This study investigated the effectiveness of using Pixton-designed comic strips to enhance reading comprehension skill with elementary school students. To achieve the aim of the study, a quantitative research design was utilized. The participants of the study were 30 male and female elementary school students. They were divided into two experimental groups and a control group. The control group received traditional instruction, while the experimental groups were exposed to comic strips designed in Pixton; one was students-designed comic strips the other was teacher-designed. Pre- and post-tests were conducted to assess baseline reading comprehension and measure any improvements in comprehension skills after engaging with the comic strips. The findings showed that in the pretest no significant differences were found between the groups, indicating that their language level before conducting the treatment was similar. However, in post-test 1, groups 1 (CSS) and 2 (CST) showed significant improvements in reading skills compared to Group 3 (CG). Both Groups 1 and 2 benefited from using comic strips in their learning. With post-test 2, results reveal that only group 1 (CSS) maintained significant improvement in reading comprehension a month after instruction and the gains in Groups 2 (CST) and 3 (CG) did not persist. Comic strips made by students likely led to better long time learning as students actively participated in processing information and felt a sense of ownership over the material, which motivated them to revisit the story and solidify their understanding.

Key words: comic strips, reading comprehension

الملمعه:

تعزز المشاركة والتعلم في التعليم الابتدائي من خلال القصص المصورة المصممة من خلال تطبيق بيكستون

د. انصار عثمان الورفلي

هدفت هذه الدراسة إلى التحقق من فاعلية استخدام القصص المصورة المصممة بواسطة برنامج بيكستون في تعزيز مهارة القراءة لدى طلاب المرحلة الابتدائية. ولتحقيق هدف الدراسة تم استخدام تصميم البحث الكمي. شارك في الدراسة 30 طالباً وطالبة من طلاب المدارس الابتدائية. تم تقسيمهم إلى (مجموعتين تجريبية ومجموعة ضابطة). تلقت المجموعة الضابطة تدريس تقليدي،
بينما تم تدريس المجموعات التجريبية باستخدام صور مصورة مصممة ببرنامج بيكستون، أحدهما تم تدريسه باستخدام قصص مصورة من تصميم الطلاب والآخر من تصميم المعلم. تم إجراء اختبارات قبلية وبعدية لتقديم مهارة القراءة، وقياس أي تحسينات في مهارات الابتعاد بعد التعامل مع القصص المصورة. وأظهرت النتائج أنه في الاختبار الياباني لم يتم العثور على فروق ذات دلالة إحصائية بين المجموعتين، مما يشير إلى أن مستوى نجاحهم قبل التدريس كان مماثلاً. ومع ذلك، في الاختبار البعدى 1، أظهرت المجموعتان 1 و2 تحسينات كبيرة في مهارات القراءة مقارنة بالمجموعة 3 (CSS) واستفادة المجموعتان 1 و2 من استخدام القصص المصورة في تعليمهم. مع الاختبار اللاحق 2، كشفت النتائج أن المجموعة 1 فقط هي التي حافظت على نفس كبير في فهم القراءة بعد شهر من التدريس ولم تستمر التحسينات في المجموعتين 2 (CSS) و3 (CST). من المحتمل أن تؤدي القصص المصورة التي صممتها الطلاب إلى تعلم أفضل لفترة طويلة حيث أن الطلاب ينشطون في توفير المعلومات وشعراً بملكيتهم ل遗憾 صممتها، مما حفزهم على حفظ وتذكر القصة وترسيح فهمهم.

الكلمات المفتاحية: القصص المصورة، القراءة.
Introduction

Comic strips, with their combination of images and texts, have long held a place in the world of books and entertainment. However, it serves as a powerful tool to promote reading in English instruction.

Reading Comprehension Skill

Reading skill is an essential gateway to understanding the world and communicating with different cultures and civilizations. It is an essential skill for learning, communicating, and accessing information, jobs, and opportunities in today's world.

Kaya, E[6] emphasizes that the development of reading skills is a stimulating voyage that empowers individuals to understand and analyze the globe, as it begins with decoding written language, and converting letters into words that they pronounce correctly. This journey requires basic skills, such as fluency, that enable the reader to read easily, accurately, and at an appropriate speed. Along the way of this journey comes the skill of comprehension, which allows the reader to comprehend the meaning of a text, including main ideas, precise details, and relationships between sentences. But the reading journey does not stop at understanding. Rather, it requires the skill of analysis, which enables the reader to evaluate and interpret the content of the text, determine the writer’s point of view, and draw conclusions.

Arianto (2017) states that successful reading instruction involves considering factors that impact the learning process. These factors can be classified as internal (related to word recognition and comprehension) and external (including motivation, learning environment, and classroom dynamics).

Internal factors in reading can hinder students' abilities. External factors, such as availability of learning facilities, and classroom interaction, play a crucial role in supporting students' learning. Awareness of these factors is key in addressing challenges in reading instruction, like student motivation and engaging teaching materials.

Effective reading strategies play a crucial role in improving reading comprehension and developing proficient readers.

Many pedagogical strategies and tools have been proposed to address the problem of students' reading comprehension. One of these tools is comic strips. According to Smith [13], employing comics as a teaching tool is advocated as an effective strategy to foster reading
engagement. Comics are endorsed in educational settings for their ability to resonate with various age groups and learner proficiency levels by authentically portraying dialogues and cultural contexts.

**Definition of Comic Strips**

Comic strips, also known as comic books or graphic novels, are a sequential art form that combines narrative and visual elements to tell stories. They typically consist of a series of panels, each containing a combination of graphics, text bubbles, and captions, which together convey a story. Comic strips often feature recurring characters and stories, creating a sense of continuity and engagement for readers (Azizah and Hamid)[3].

According to Csabay (2006), Comic strips consist of a series of images that enable students to easily gain ideas through a chronological order of the story. The goal of using comic stories in teaching reading skills is to make students work in an atmosphere full of fun and joy and reduce fear within a classroom.

Edmund [5] outlines a comprehensive teaching strategy to leveraging comic strips in a classroom, divided into three key stages: before reading, during reading, and after reading. Before delving into the comic's text, students visually explore the comic and predict about its content and characters. During the reading phase, teachers and students read the comic together, discuss material, connect it to students' knowledge and experiences, and focusing on understanding vocabulary within the comic. After reading, worksheets are completed in groups, and a review and discussion of students' answers take place, promote active engagement, vocabulary comprehension, and collaborative learning through visual and textual elements of comics.

Sarma [12] mentioned that using comic strips in books as teaching tools started in the USA in the mid-20th century. They have gained popularity due to being perceived as effective educational resources.

Moreover, Aisy et al[1] state that comics can act as an important bridge between literature and visual entertainment in today's digital era. They are valuable tools in classrooms and can positively influence students' learning behavior. Many studies have demonstrated that comic books are a powerful resource, particularly for students who face challenges with reading, as they can support the development of reading skills and overall literacy.
A variety of studies (e.g. Brown[4]; MERÇ[8]; Ravelo[10]; Rengur and Sugirin[11]; Aisy, [1]; Purwanitasari2010; Ali, 2023) were conducted to examine the influence of comic strips on teaching reading skill. Their findings revealed that comic strips are effective resources for students as they offer a multi-faceted strategy to learning that caters to different learning styles and can significantly benefit students.

**Methodology**

This study employed an experimental quantitative research design with three groups to investigate the effectiveness of Pixton-designed comic strips in enhancing reading skills among primary school students in Benghazi, Libya. The sample consisted of 30 male and female primary school students from the same grade level (Grade 6). They are aged 10-11. All of them were receiving a normal schedule of other academic classes at the same time. This study provided them with extra classes. The distribution of the three classes into different courses was decided on a random basis. They were randomly assigned to 3 groups: two experimental groups and a control group. Each group contained 10 students. Group 1 (CSS) received instruction based on student comic strips where the students created their own comic strips using Pixton; group 2 (CST) was taught using teacher-designed comic strips which were designed by the researcher. Group 3 (CG) was the control group which received traditional instruction where students were not exposed to comic strips.

**Instrument**

The researcher conducted reading instruction for all three groups for a duration of one week. The instruments employed in this study consisted of three tests: a pretest, posttest 1 and posttest 2. Posttest 2 was designed to determine whether the proficiency gains from instruction remained persisted after one month or not. The tests were similar (three versions with the order counterbalanced), so that the researcher ensured that the same test format was used to retest reading skill and that the student who had version (1) in the pretest had different versions (2 or 3) in posttest 1 and posttest 2. In other words, each student received three different versions of each test.

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1 Pixton is a web-based platform designed for creating comics and avatars. A variety of characters, backgrounds and props can be selected to build engaging stories one panel at a time, making it an easy-to-use tool for teachers and students to tell stories or visualize ideas in a creative and fun way.
Procedure
In order to conduct this study, verbal permission was gained from the head of a private primary school (Al-Noor). Next, the instructors of the learners were informed of the intact classes (lessons of this study) for which the course was conducted and a brief description of the study and its aim was provided.

The pre-test was administered prior to the course so that each group's baseline could be established. Then, one week later, after the course was completed, posttest1 was administered immediately in order to measure students' improvements; students underwent post-test 2 a month later to establish long time effects of the process of learning.

Instructional Materials
Group 1 (CSS)
Using Pixton and after login the platform, the researcher guided students to choose a workspace template with 4 panels. A story was chosen about (a girl named Sarah who lost her cat but was able to find it with the help of her friends). The comic strips consisted of 4 panels. Panel 1 contained two characters: Sarah and the cat. It contained a garden background in which Sarah was playing with her cat. Panel 2 contained the same background, but Sarah looked worried because she lost her cat, with a speech bubble containing the question (Where did Katie go?). Panel 3 contained Sarah with two girls looking for Katie, one of them pointing down the path to a place and the other calling out saying (Let's look for Katie here). Panel 4 included Sarah hugging her cat while she was beaming with her friends with a speech bubble for Sarah stating (I finally found Katie).

Group 2(CST)
Panel 1 contained a beach background with a sunny atmosphere, a boy carrying a backpack, and a girl carrying a doll walking on the beach, and a speech bubble for the boy stating (Look, Vicki, there is a bottle on the beach). Panel 2 contained a close-up of the bottle with a rolled-up paper inside it, which Vicky holds and points to with curiosity and a speech bubble stating (What's inside?). Panel 3 showed that Vicky opened the bottle and took out the message with a riddle says: (we come together to form words, but each of us has a unique sound. Can you guess who we are?). The purpose of choosing this riddle is to make students work together and elicit the answer, which is (letters).
Using letters the researcher provided the students with scattered words and asked the students to arrange them and form a word from the story to enhance comprehension and acquire vocabulary.

In addition, with groups 2 & 3, the researcher facilitated some discussions about the two stories and asked the following questions: (What are the main characters?) (What are the key events that took place?) and (What message or lesson does the story teach?).

**Group 3 (CG)**

Students in the control group received traditional reading instruction that does not involve comic strips. It included activities like reading comprehension exercises. With this group the story (the very hungry caterpillar) by Eric Carle was taught. Pre-reading activities and questions were used such as (Have you ever seen a caterpillar before? What does it look like?). After finishing reading the story, the researcher asked the students (after reading) questions about the caterpillar such as (What type of food did it eat every day?) as the story addressed types of food were eaten by the caterpillar every day.

**Findings**

First, descriptive statistics (table 1) of the three tests revealed that the treatment groups 1&2 (CSS and CST), regardless of different instruction strategies, outperformed the third group (CG) in the growth from the pre-test, posttest1 and posttest2. Group 2 (CST) got the highest mean. The results showed that before the beginning of the treatment, the level of the students was close, while in posttest 1, group 2 obtained the highest mean score (29.90) followed by group 1 (25.50), then 3 (23). As for posttest 2, the results showed the superiority of group 1 (25.50), then 2 (23.40), then 3 (21.90), respectively.
Table (1) Descriptive Statistics of the Three Groups in the Three Tests

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS</td>
<td>10</td>
<td>21.50</td>
<td>3.629</td>
</tr>
<tr>
<td>posttest1</td>
<td>10</td>
<td>22.50</td>
<td>.527</td>
</tr>
<tr>
<td>posttest2</td>
<td>10</td>
<td>25.50</td>
<td>2.273</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CST</td>
<td>10</td>
<td>21.60</td>
<td>3.688</td>
</tr>
<tr>
<td>posttest1</td>
<td>10</td>
<td>29.90</td>
<td>.316</td>
</tr>
<tr>
<td>posttest2</td>
<td>10</td>
<td>23.40</td>
<td>1.955</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CG</td>
<td>10</td>
<td>21.50</td>
<td>3.136</td>
</tr>
<tr>
<td>posttest1</td>
<td>10</td>
<td>23.00</td>
<td>2.494</td>
</tr>
<tr>
<td>posttest2</td>
<td>10</td>
<td>21.90</td>
<td>2.726</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To determine whether there were pre-existing differences amongst the three groups, a one-way ANOVA was performed on the pretest scores of all groups. The ANOVA findings showed that no significant differences lay between the performances of the three groups before the treatment was initiated: \( F(2, 27) = 0.033, p = 0.997 \). The p-value = 0.997 is greater than 0.05. Accordingly, the pre-test revealed that the three groups did not appear to have any particular advantages over one another at the outset.

For posttest 1, three kinds of analysis were carried out: (1) 3x3 repeated Measures ANOVA (3 tests x 3 groups), (2) an independent sample t-test (a follow up analysis used to compare groups: CSS vs. CST, CSS vs. CG, CST vs. CG in the three tests) and (3) a paired sample t-test (a follow up analysis was used to compare tests within the same groups. That is, for each group: pre-test vs. post-test1 and pre-test vs. Post-test 2). With regard to Repeated Measure ANOVA, an analysis of Test*Group interaction was performed to examine whether there were significant differences among the three groups.

**Repeated Measures ANOVA**

When analyzing the main effects of the test*group results. The analysis of the ‘test’ is significant with a large effect size\(^2\): \( F(2, 27) = 12.418, p < 0.001, \) Partial Eta Squared = 0.476.

\(^2\) According to Cohen’s guideline (1988), an effect size of 0.10 signifies a small effect, an effect size of 0.25 signifies a medium effect, and an effect size of 0.40 signifies a large effect.
This means that there are significant differences among the three tests when all groups are averaged together.

Moreover, a follow up analysis (Independent sample t-test and paired sample t-test) was conducted and the results are as follows.

**Independent Sample t-test Analysis**

An independent – sample t-test was conducted to compare the pre-test scores, post-test 1 and post-test 2 scores among the three groups.

Regarding the pre-test analysis, three levels were analyzed: Group CSS vs. CST, CSS vs. CG and CST vs. CG. The results revealed that there were not any significant differences in the scores for level 1: \( t (18) = .061, p = .951 \), level 2: \( t (18) = -1.46, p = .706 \) and level 3: \( t (18) = 1.17, p = .736 \).

With respect to post-test 1 analysis, the findings showed that there were significant differences only between levels 1 and 3, i.e., level 1: \( t (18) = -22.638, p < 0.001 \) and level 2: \( t (18) = 3.101, p = 0.06 \), level 3: \( t (18) = 8.678, p < 0.001 \).

Post-test 2 analysis showed that there were significant differences only with level 2. That is, level 1: \( t (18) = 2.215, p = 0.40 \) and level 2: \( t (18) = 3.207, p < 0.001 \). As for level 3: \( t (18) = 1.414, p = .174 \). This means that after one month of instruction only group 1 remained improved.

**Paired Sample t-test Analysis**

A paired-sample t-test was conducted to compare Pre vs. Post-test 1 and Pre vs. Post-test 2 for each group. The findings were as follows:

The results of group 1 illustrated that it did not improve significantly in their performance from pre to post-test 1: \( t (9) = -3.493, p = 0.007 \) and it improved significantly from pre to post-test 2: \( t (9) = 4.536, p < 0.001 \). This result suggests that this group’s performance developed after a month of instruction.

With group 2, the findings showed that the performance of this group had significant differences from pre-test to posttest 1: \( t(9) = -7.012, p < .001 \) whereas from pre-test to posttest 2 the improvement was not significant: \( t(9) = -1.296, p = .227 \). This result suggests that the group remained unchanged after a month of instruction.
Likewise, the results of group 3 showed that this group had significant differences only between pretest and posttest 1: $t(9) = -4.4881$, $p = <.001$ but not between pretest and posttest 2: $t(9) = -1.078$, $p = .309$. This result suggests that the group remained unchanged after a month of instruction.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pair</th>
<th>Pretest – Posttest</th>
<th>t</th>
<th>df</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS</td>
<td>Pair 1</td>
<td>Pretest – Posttest1</td>
<td>-3.493</td>
<td>9</td>
<td>.007</td>
</tr>
<tr>
<td></td>
<td>Pair 2</td>
<td>Pretest – Posttest2</td>
<td>-4.536</td>
<td>9</td>
<td>.000</td>
</tr>
<tr>
<td>CST</td>
<td>Pair 1</td>
<td>Pretest – Posttest1</td>
<td>-7.012</td>
<td>9</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Pair 2</td>
<td>Pretest – Posttest2</td>
<td>-1.296</td>
<td>9</td>
<td>.227</td>
</tr>
<tr>
<td>CG</td>
<td>Pair 1</td>
<td>Pretest – Posttest1</td>
<td>-4.881</td>
<td>9</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Pair 2</td>
<td>Pretest – Posttest2</td>
<td>-1.078</td>
<td>9</td>
<td>.309</td>
</tr>
</tbody>
</table>

The results of the paired sample t-test reveal that both groups 2&3 (CST and CG) improved significantly from pre-test to post-test and the improvement did not retain significant a month after instruction when post-test 2 was administered. However, for group 1 CSS, significant progress was noticed just on post-test 2, but not on post-test 1.

**Discussion**

The findings of the study showed that there were no significant differences between the groups before conducting the treatment. That is, pre-test analysis indicated similar starting points. With regard to posttest 1, both groups 2 & 3 (CSS, CST) improved their reading skills from pre-test to posttest 1 compared to group 3 (CG). However, only group 1 (CSS) indicated significant improvement that lasted until posttest 2 (one month later). The improvement in groups 2 & 3 did not persist after one month. Generally, it can be concluded that using Pixton to create student-designed comic strips was an effective teaching strategy for enhancing reading skills and retention compared to traditional instruction or teacher-created comic strips. Student engagement in creating their own comics might contribute to longer-lasting learning benefits.

Having Group 1 students (CSS) create their own comics immersed them in a deep level of engagement with the learning materials. This led to their participation in processing information, selecting key points and translating them into visual images. This deeper
cognitive engagement resulted in stronger memory encoding and retrieval since they were the ones who designed the lesson. Moreover, when they created their own comics, they did not learn the content only, they actively shaped how it was presented. This sense of ownership motivated them and resulted in better long-term retention.

Additionally, although the treatment lasted only one week, creating their own comic encouraged students to revisit the story outside of class time. It is possible that they kept thinking about the plot, characters, and message of their comic, resulting in repeated exposure to and reinforcement of the reading lesson.
References


