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Effects of Comics in English Classroom: An Experience With Creativity, Innovation, and Effective Learning

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Abstract—**This study presents the results of applying a comic program to a sample of 183 students from a Peruvian public university enrolled in the English course. For this purpose, a pre-experimental design was chosen, in which productive competencies were evaluated before and after implementing a comic program, designed and published on a blog created by the students. Likewise, an effort was made to group their performance, considering the components of creative thinking. Additionally, an adjusted model was sought where four constructs, English competencies (EC), Psychological Aspects (PA), Character Identification (CI), and Learning Strategy (ES), could explain the occurred didactic process through a confirmatory factor analysis (CFA). Additionally, the students' perceptions about the completed program were sought through an open-ended question added to the survey used in the previous step. Among the most notable results, we significantly improved productive competencies (-11.79 and -11.77; p-value < .001). Regarding the formation of clusters, four had the appropriate parameters. On the other hand, the model had measurements that were quite close to the ideal (RMSEA = 0.069; CFI = 0.946; TLI = 0.934; and GFI = 0.898). Among the most notable perceptions given by the students, the previously unexperienced, innovative, and fun learning experience stands out.**

Index Terms—**comics, productive skills, clusters, confirmatory factor analysis (CFA), model fit**

I. Introduction

Nowadays, the strong connection between innovation and creativity is recognized to such an extent that the existence of one is inconceivable without the other. Numerous studies have highlighted the importance of these two variables in the classroom, promoting autonomy and facilitating meaningful learning. The English classroom is not unaware of this reality, considering that in developing countries like Peru, the traditional teacher-centered method causes very little motivation in students, who mostly enroll in it simply because it is mandatory, and overlook its application in academic and technological areas. In this regard, Moiseyenko (2021) recommends that to foster innovation and creativity in the English language teaching and learning process, it is necessary to provide students with contextualized content and offer teacher support to promote their students' creativity in an environment where technology is present. Likewise, Hidayat et al. (2023) emphasize the importance of the teacher's position in enabling students to create innovative scenarios, noting that they must possess practical communication skills, a collaborative approach, critical thinking, and creativity. Given the above, we can list multiple pedagogical options that promote the achievement of these scenarios, including the use of comics. Discussing comics takes us back to the childhood of many students, to the means that helped them read better and the opportunities where their imagination took flight, to the point that sometimes they became part of a story. Their colorful panels, the texts in the speech bubbles, and the characters' physical presentation make long-term learning possible. Clark (2017) clarifies that the usefulness of comics in learning the English language begins with the motivation that both adults and children have to read them. While it is true that comics are primarily read in the mother tongue, there is a greater possibility that students will read one in English than a book without any graphics. The same author advises using graphic novels at the beginning of a new topic to promote reading other non-graphic media, which helps these students understand the subject more deeply. All of the above and more have made comics an alternative for teaching various subjects in the classroom, such as mathematics (Chu & Toh, 2020), social studies (Topkaya et al., 2023), science (Akcanca, 2020), literature (Sharma, 2020), and history (Decker & Castro, 2012); becoming one of the most used means and strategies by teachers who want to promote enjoyable reading, activate creativity, and even increase motivation for learning a new language. Having said all that, the next step would be to suggest that students create their comic strips. For this, they should be instructed to apply the principles of effective writing and consider their interests (Gutiérrez-Huancayo, 2024), allowing their imagination and creativity to flourish. The teacher must make the students aware of the power of a drawing with text. In this sense, the teacher serves as a writing advisor, guiding the student's communication intentions. Likewise, regarding its aesthetics, the teacher could suggest the size of the vignette or the bubble's shape, the expressions used and their wording, or some physical expressions of the main character. However, it depends on whether the student chooses to consider it. The following recommendation is to share and use the comic created in the classroom for several reasons. One is overcoming the fear of speaking in front of an audience

in a language that is different from one's own. Additionally, there is the practice of developing oral skills, which fosters empathy, solidarity, and respect among classmates (Williams, 2008). To conclude this section, it is worth discussing creative thinking, an indispensable condition in programs like these where students develop creative and innovative proposals to solve a challenge or new situation. In this sense, authors like Senturk and Cicek Senturk (2023) argue that the academic support of the teacher is essential for students to have the freedom to explore a multitude of ideas, often unique and diverse. In this way, grammatical and orthographic support in writing and pronunciation and intonation when voicing the character is crucial for the student to unleash a universe of new and different ideas from existing and conventional ones.

Despite the vast amount of information available on comics and their applications in the classroom, there are few published experiences where the design of these can be shared on platforms. Likewise, few studies have evaluated productive competencies (writing and speaking) at the end of using comics, emphasizing groups of students and considering the components of creative thinking. On the other hand, few have proposed adjusted models considering the constructs of EC, PA, CI, and LS. Additionally, there are few records of students' perceptions at the end of a program to learn English using comics.

II. Methodology

The present work had three main objectives. The first was to determine the impact of the comic program on writing and oral expression skills before and after its implementation.

The second objective was to differentiate and group creative thinking from the videos uploaded to the blog by the students. In that sense, the earlier performance was evaluated based on fluency, flexibility, originality, and elaboration. The third objective was to develop a fitted model to assess the relationship between the constructs of English competencies (EC), psychological aspects (PA), identification with the character (IC), and English learning (EL). The fourth objective was to understand the participants' perceptions of this project. Different components will be considered to fill these gaps and achieve the mentioned objectives. Therefore, we will begin by referring to the philosophical component of this. Thus, the positivist context is present in the quantitative component of the first stage. In contrast, the interpretive context is present in the final stage, which is qualitative.

That said, we can pose the following questions and hypotheses:

Q1: Is there a significant difference in the students' productive competencies after implementing the comic program?

Q2: How many students are there, and how are they clustered according to the components of creative thinking?

Q3: Is the adjusted model, which includes the constructs EC, PA, CI, and LS, adequate?

H01: There is no significant difference in the productive competencies of the students in the English language after the implementation of the comic program.

H02: There are no differentiated clusters among students based on the components of creative thinking.

H03: The adjusted model, which includes constructs EC, PA, CI, and LS, is inappropriate.

A. Sample & Sampling

In the present research study, 183 undergraduate students aged 17 to 35 from a public university in Piura, a city in northern Peru, participated. 135 (73.7%) participants were men, while 48 (26.3%) were women. The distribution by field of study was as follows: 125 in engineering (68.30%), 37 in biology (20.20%), and 21 in accounting (11.50%). They all consented to publish the material created during the English & Comic project. Non-random convenience sampling was considered. Likewise, students taking the English for Specific Purposes (ESP) course, in which writing and oral expression competencies were considered academic objectives by the end of the semester, were considered an inclusion criterion. The students taking the course mentioned above for the second time were considered the exclusion criterion.

B. Research Design and Approach

The experimental design was considered in the development of the present work. To be more specific, a pre-experimental design with a single group was used. On the other hand, the quantitative approach was employed for the first part, which involved measuring productive competencies (writing and speaking) in the English language, forming groups based on the categories of creative thinking, and developing an adjusted model of the constructs, as mentioned earlier. Likewise, the qualitative stage involved coding the responses provided by the students to the open-ended survey question.

C. Program Features

The research was conducted between October 2024 and January 2025 at the National University of Piura's facilities. The first stage involved consulting with enrolled students to determine their availability to participate in an English language teaching program that utilized comics. One hundred percent (188 students) agreed to participate in the program; however, five withdrew for personal reasons. That is why 183 students were considered for this work. A pre-assessment was conducted to measure writing and oral expression skills. For this, each student had to create a character and a story of their own choice. Then, they should communicate it orally to the other classmates in the classroom. Following this phase, a program was implemented that focused on learning the English language within the context of

each professional career. Likewise, the interests and individual learning needs were taken into account. Each student was advised on vocabulary, grammar, and spelling during each academic meeting, using their developed comic. In the last month, each student recorded a video lasting 1 to 2 minutes, describing the story, what or who inspired them, or the most notable aspects of the main character. Each video was analyzed and categorized into the components of creative thinking, including fluency, originality, flexibility, and elaboration. All the videos were uploaded to a blog created by the teacher. Each video was analyzed and categorized into the components of creative thinking, including fluency, originality, flexibility, and elaboration. At the end of this part, each student was evaluated with the post-assessment. Additionally, each student completed a survey to gather information to create the adjusted model. Finally, in the same study, the students perceived the completed program.

D. Instrumentation

Writing skills were evaluated using a rubric. Rakedzon and Baram-Tsabari (2017) mentioned grammar, vocabulary, coherence, and readability as the criteria. On the other hand, oral skills competencies were assessed using a separate rubric that evaluated grammar, pronunciation, fluency, and vocabulary. This instrument is based on Ulker's (2017) theoretical proposal. In both cases, each criterion had scores ranging from 1 to 4, reflecting the student's performance: 1 indicates a beginning, 2 indicates progress, 3 indicates completion, and 4 indicates achievement. These rubrics were used both at the program's beginning and end. On the other hand, the criteria considered to measure creative thinking were fluency, originality, flexibility, and elaboration. Each criterion had scores ranging from 1 to 4, considering performance from lowest to highest. This proposal was based on the work published by Silvia et al. (2013).

The author designed a survey (Google form) based on reading the published theory (Appendix). The first part included sociodemographic information, including gender, age, and professional background. Next, 23 items with Likert-type options, ranging from 1 (completely disagree) to 5 (completely agree), passing through 2 (disagree), 3 (neutral), and 4 (agree). The final question concerns the students' perceptions of the developed program. The theory proposed by Megawati and Anugerahwati (2012) brings us closer to the first construct, English competencies (EC), composed of items 1 to 7. For the second construct, psychological aspects (PA), the proposal made by Anggoro (2012) was considered. The items of this construct range from numbers 8 to 11. For the third construct, Topkaya's (2015) position regarding the student's identification with the comic character (CI) was considered; specifically, items 13-18 were examined. For the last construct, Silva et al. (2017) considered comics as teaching strategies (LS), and its measurement included items 19 to 23. All the referred items are used to perform confirmatory factor analysis (CFA). The survey was designed in Spanish, the participants' native language, to facilitate completion.

At the end of this study, an open-ended question was considered, located at the end of the survey. This single question about students' perceptions of the completed program seeks the students' spontaneity; of course, with the presence of many responses, they must be categorized according to their similarities.

E. Data Collection

The data obtained in the present research work was collected between October of last year, when the pre-evaluation was conducted, and January of this year, when the results of the comics program's impact were obtained through the post-evaluation. These days, the students completed a survey used to create the adjusted model and understand their perceptions of the completed program.

F. Data Analysis

The collected information was analyzed and statistically treated in three stages. In the first stage, SPSS software version 27 was used to determine the normal distribution for the writing and oral competence criteria. According to the results obtained (in both cases, the Kolmogorov—Smirnov values were less than 0.001), a non-parametric measure, the Wilcoxon signed-rank test, was used for two related samples. Likewise, the program's effect sizes (Hedges' g) were sought.

The Jasp software enabled clustering the components of creative thinking in the comic. These data come from evaluating the student's performance in each video uploaded to the Blog. This second quantitative component of the paper primarily sought to explore the K-Means Clustering (R2, Silhouette, and group size).

An adjusted model was developed in the second stage, comprising four constructs. In this way, the reliability of the proposed survey was sought through Cronbach's alpha. Likewise, the initial exploratory factor analysis (EFA) provided valuable information for the confirmatory factor analysis (CFA). In this sense, data such as the KMO and Bartlett's Test and their significance provided us with the feasibility of conducting the CFA. Likewise, the Jasp software allowed us to obtain the main model measures (RMSEA, CFI, TLI, GFI, IFI). Likewise, the graph of the adjusted model was also achieved with this software.

The data from this study's qualitative component came from the responses to the open-ended question at the end of the survey. These responses were categorized into effective learning alternatives, fun experiences, and disadvantages of the comics program.

III. RESULTS

An essential part of the present study was designing comic strips, which included personal experiences, superheroes, and even unreal situations, all products of personal imagination and emotion.

Figure 1. Screenshot of Video and Comic Blog

These initial results aim to address the first objective, which is related to the impact of the comic blog program on writing and oral expression skills.

TABLE 1
WRITING COMPETENCE BEFORE AND AFTER THE COMICS PROGRAM

Criteria	Test	Mean ± Std	Z	p-value	Hedges' g
Grammar	Pretest	1.163±0.650	-11.883	<.001	0.895
	Posttest	3.639±0.481			
Vocabulary	Pretest	1.169±0.601	-11.947	<.001	0.771
	Posttest	3.693±0.462			
Coherence	Pretest	1.322±0.592	-11.957	<.001	0.754
	Posttest	3.765±0.425			
Readability	Pretest	1.207±0.646	-11.888	<.001	0.841
	Posttest	3.617±0.487			
Comic´s Program	Pretest	4.863±1.539	-11.769	<.001	1.863
	Posttest	14.715±1.025			

As we can observe in the previous table, there is a noticeable difference of 2.47, 2.52, 2.44, and 2.41 in criteria grammar, vocabulary, coherence, and readability, respectively. In addition, a decrease in standard deviation is noted in the post-evaluation; in other words, after applying the comic program, there is less dispersion, and consequently, the effect on written competencies after using comics is very similar among most participants. The negative Z values indicate that the results are above average; in other words, there is a clear improvement in the participants' writing skills by approximately 11 points. Values less than 0.001 indicate the significance of the comic program; in other words, we can reject the null hypothesis, which states that the mentioned program does not affect writing skills. Finally, an effect size greater than 7.5 is considered statistically significant. Therefore, we can infer in this part of the research that the comic program is effective in substantially improving the English writing skills of this group of students. Next, we will examine the effects of the comic book program on oral competencies.

TABLE 2
ORAL COMPETENCE BEFORE AND AFTER THE COMIC PROGRAM

Criteria	Test	Mean ± Std	Z	p-value	Hedges' g
Grammar	Pretest	0.786±0.713	-11.889	<.001	0.897
	Posttest	3.540±0.499			
Pronunciation	Pretest	0.814±0.776	-11.852	<.001	0.980
	Posttest	3.606±0.489			
Fluency	Pretest	0.830±0.725	-11.930	<.001	0.838
	Posttest	3.590±0.493			
Vocabulary	Pretest	0.819±0.759	-11.858	<.001	0.950
	Posttest	3.557±0.498			
Comic´s Program	Pretest	3.251±1.399	-11.779	<.001	1.670
	Posttest	14.295±0.931			

The previous table shows a clear difference of 2.754, 2.792, 2.760, and 2.738 in the criteria of oral expression grammar, pronunciation, fluency, and vocabulary, respectively. The decrease in the standard deviation to almost half in the case of the post-evaluation indicates a lower dispersion of the results after the program's application, as mentioned earlier, and a similarity in the performance of the group under study in their oral competencies in the English language.

The negative Z values mean that the scores obtained in the post-evaluation are above average. This, along with a p-value less than 0.05, allows us to reject the null hypothesis, which indicates that the comic program does not significantly affect the oral competencies of the participants in this program. Finally, the effect sizes with values above 0.8 illustrate that the comic program had a significant effect.

After executing the program, the students manually designed a comic strip and uploaded it to the blog as a video to share their stories. Here, we will explore everyday situations for an engineer designing a bionic arm and others where an infrastructure problem is solved, stories where tax payment advice is provided, or simply a situation where quality control and rock music intersect (Appendix). Each video was evaluated using a creative thinking approach, so they were grouped into categories: fluency, flexibility, originality, and elaboration.

According to the option Neighborhood-Based Clustering, the following Results were obtained:

TABLE 3
K-MEANS CLUSTERING

Clusters	N	R^2	AIC	BIC	Silhouette
4	183	0.545	363.410	414.760	0.400

Where AIC is the Akaike Information Criterion, and BIC is the Bayesian Information Criterion

The model described above yields the best fit, leaving us with four groups that have an R^2 value above 0.5. AIC and BIC have the lowest figures among the tested models, and the Silhouette index is above 0.25.

TABLE 4
CLUSTER INFORMATION

Cluster	1	2	3	4
Size	56	52	45	30
Explained proportion within-cluster heterogeneity	0.176	0.154	0.426	0.243
Within the sum of squares	58.418	51.195	141.106	80.690

The previous table shows the appropriate proportion of the formed groups (greater than 20 units). Regarding the variable explained proportion within-cluster heterogeneity, there is minimal heterogeneity among the groups, which is interpreted as indicating that the majority of the 183 students in this group possess the same competencies, despite being from different professional fields. Regarding variable x, groups 1 and 2 have similar data dispersion, while group 4 has more excellent dispersion than the previous two. Finally, Group 3 would have a more excellent dispersion than the aforementioned, which allows us to conclude that it is a group with components of creative thinking that differ significantly from the rest (low levels), as observed in the following graph.

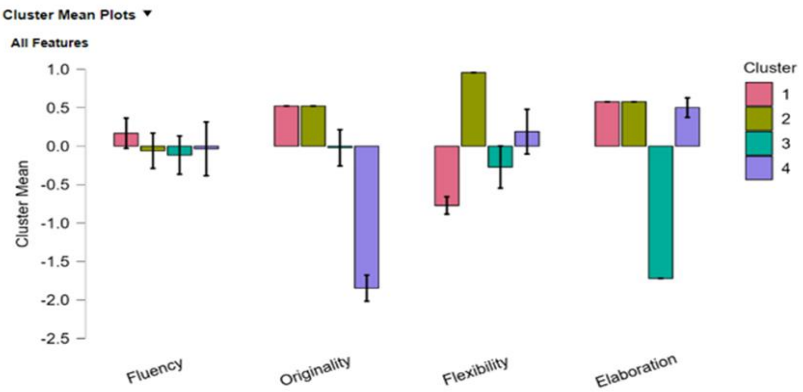

Figure 2. Cluster Mean Plots

The formation of the following four clusters suggests that the first one has low levels of flexibility; in other words, it has few possibilities for varying the ideas it proposed initially. In the second cluster, unlike the previous one, there is a greater capacity to innovate ideas and flexibility. The fourth cluster has a low index in all components of creative thinking, meaning they have difficulties in posing innovative questions and answers (fluency), they also have problems changing routes or finding new paths to answer questions (flexibility), as well as creating new and possible ideas (originality) and producing new aesthetic trends (elaboration). The last cluster's main characteristic is the limited possibility of innovation with a scope different from the typical and conventional (originality). In this sense, we can reject the null hypothesis, as the performance of the students who participated in the comics program can be grouped, considering the components of creative thinking. In this second part of the present study, we conclude that four heterogeneous groups can be formed through clustering. Therefore, we can reject the second null hypothesis.

For constructing the adjusted model, the reliability results were assessed using Cronbach's Alpha, which yielded a value of 0.946, which is considered excellent for the designed survey. The data obtained from an exploratory factor

analysis (EFA), as indicated by the KMO (0.925) and Bartlett's Test ($p < 0.000$), suggest that it is indeed possible to conduct a confirmatory factor analysis (CFA) for the design of the mentioned model.

The main measures of the adjusted model were as follows:

TABLE 5
MODEL FIT MEASURES

X^2	df	X^2/df	GFI	CFI	TLI	IFI	RMSEA	RMSEA lower bound	RMSEA upper bound	p
182.387	98	1.861	0.898	0.946	0.934	0.947	0.069	0.053	0.084	0.256

X2: Chi-Square; df: degrees of freedom; GFI: Goodness of Fit Index; CFI: Comparative Fit Index; TLI: Tucker Lewis Index; IFI: Bollen´s Incremental Fit Index; RMSEA: Root Mean Square Error of Approximation; p: probability

To detail the table above, we must begin by interpreting the following results: X2/df is below 3 (1.861). The ideal value of the GFI should be close to 1, so in this case, it is very high (0.898). The CFI value is more significant than 0.9 (0.946), indicating that the comparative fit index falls within the desirable range. The TLI, which indicates the proportion of variance explained by the factorial model, should be greater than 0.9; in this case, it is indeed within the specified range (0.934). The RMSEA, or root mean square error of approximation, ideally should be less than 0.06; in our case, it is slightly above the expected value (0.068), which indicates that the model may require revision. The partial conclusion of this part of the study indicates that the proposed adjusted model requires minimal changes. In this way, we can reject the null hypothesis, interpreting that it can be considered an appropriate model.

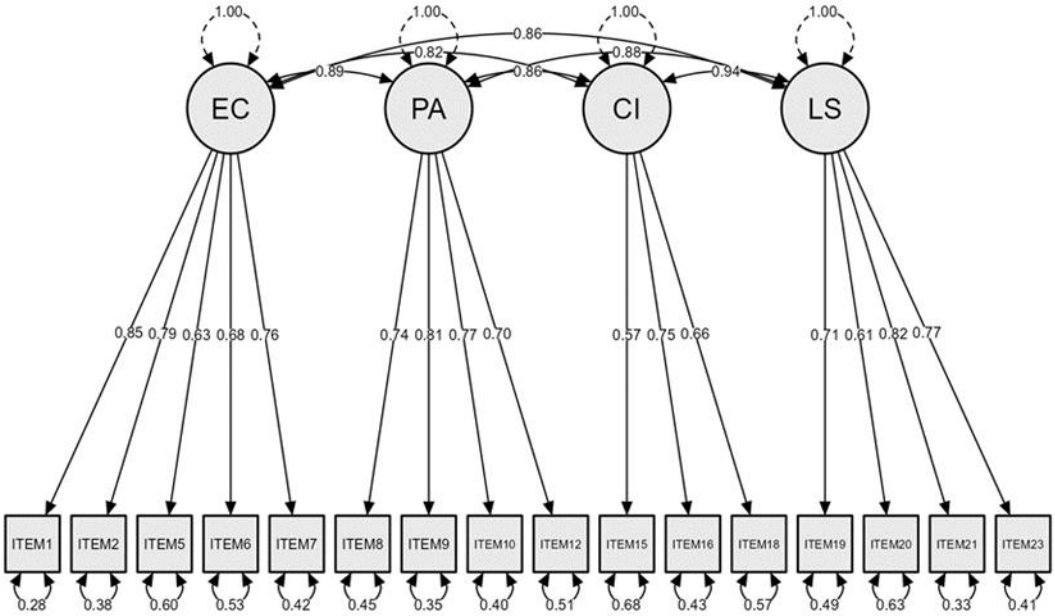

Figure 3. Fit Model
EC: English Competencies; PA: Psychological Aspects; CI: Character Identification; LS: Learning Strategy

The previous graph shows a high correlation between English competencies (EC) and psychological aspects (PA). Thus, we can infer that mastering and handling the English language during the comic design process increases motivation, willpower, creativity, and self-confidence in this group of students. A similar correlation exists between this domain of English competencies and the identification with the comic book character (CI). A similar (high) value exists between EC and comics as a learning strategy (LS). On the other hand, it is worth noting that there is a strong correlation between psychological aspects and identification with the main character. There is a high correlation between psychological factors and comics as learning strategies. The most notable correlation is between identification with the character and the comic as a learning strategy ($r = 0.94$). Allowing students to develop a story where the character represents them becomes an effective learning strategy.

To describe the qualitative component of this study, the responses to the open-ended questions were classified into three categories. The first relates to the fact that the students considered the comic program an effective learning alternative, with expressions such as:

"It was interesting the way this course is presented, and it is an interesting methodology since it improves our English depending on the story written" (Student 3).

"Excellent learning strategy. I am genuinely grateful to my teacher for the tremendous support in developing this project..." (Student 10).

"Creating and describing your character is a way to open your mind, to write your comic story from the beginning and see how it ends, and to learn" (Student 11).

"I think creating a story like this serves as a tool to learn many more words to use in the comic, which is very helpful for learning" (Student 13).

"It is a perfect strategy because through what each person creates, essential stories and life examples can emerge. Since it is in English, it makes it much more interesting, as we can see that the expressions and the way people interact in English are fascinating" (Student 15).

Learning English through designing my comic has been an enriching and enjoyable experience. This creative approach allowed me to practice the language dynamically, explore my imagination, and express myself artistically (Student 18).

"I think it is a very didactic educational strategy that allows learning English while fostering creativity and autonomy during the learning process" (Student 24).

Learning English through the design of a comic is compelling, entertaining, and tailored to our interests, tastes, and career goals. It has been an advantageous experience, which provided us with vital knowledge to complement our studies, jobs, and career paths" (Student 31).

The process has been satisfactory because creating a comic allows individuals to capture their creativity in a drawing and decide how to express their story. Learning English by creating a comic is very helpful for teaching basic English" (Student 47).

"By creating the English comic, I have increased my creativity. Additionally, I find it a very didactic and appropriate method to make English not just an obligation but also something that helps us practice English. Creating the comic is a very didactic approach that motivates students and provides a more appropriate, fun, and transparent way of learning" (Student 52).

"It is a fun and easy way to learn English, as you can express your emotions through the drawings you create in the comics" (Student 91).

Learning English through the design of a comic is a compelling, entertaining, and tailored approach that caters to our interests, tastes, and career goals. It has been a highly feedback-rich experience, which has provided us with vital knowledge to complement our studies, jobs, and career paths (Student 156).

"It is an exciting way to learn English. You have fun creating a character and a plot related to civil engineering, and, above all, being able to express everything in English. This crucial language opens more doors in our careers. It is an excellent idea for learning English; you create the dialogues and develop ideas in English" (Student 176).

Several students believe this comic program has allowed them to improve their pronunciation, vocabulary, and other English language skills within this context.

"Learning English by designing my comic is a creative and effective way to develop language skills. Combining visual elements with writing facilitates the association of words with images and contexts. Likewise, we encourage language practice in a narrative context, helping to improve vocabulary, grammar, and written expression. At the same time, it enhances imagination and motivation, as the process is interactive and fun. It is a strategy that teaches the language and promotes self-expression and creativity" (Student 30).

"It was a new experience that allowed me to develop my understanding of the English language, as well as my pronunciation and fluency when speaking" (Student 38).

"I have loved the experience; it has greatly helped me improve my pronunciation, grammar, and creativity" (Student 57).

"Learning English by designing a comic was an innovative and self-taught way to reinforce our language knowledge in grammar, oral, and written skills. Creating characters with our imagination related to our career and involving science was an advantageous way to practice" (Student 72).

"I think creating a story like this serves as a tool to learn many more words to use in the comic, which is very helpful for learning" (Student 142).

"Creating an English comic sparked creativity and helped with the grammar and pronunciation of many terms related to our field. It was conducive, and I would do it again" (Student 153).

Learning English by creating your comic is a fun and practical way to improve your language skills. You combine creativity with learning by writing dialogues, describing scenes, and using expressions in context. Additionally, by doing it visually, you reinforce vocabulary and grammar more naturally. It is an entertaining way to learn while expressing yourself and developing your imagination (Student 173).

The other category considered in the qualitative part was the fun aspect of the developed program.

"It is a very effective and fun learning method, especially for learning English techniques related to our field" (Student 3).

In my final opinion, learning English through designing a comic is an effective and enjoyable way to improve my vocabulary, grammar, and reading comprehension. Describing characters, settings, and actions is essential when creating a comic, practically reinforcing my learning. The creative nature of the project keeps my motivation high, and the final result—the comic—serves as a tangible reminder of my progress. However, it requires discipline and an active search for resources to ensure grammatical correctness and language fluency" (Student 8).

Learning English through designing my comic has been an enriching and enjoyable experience. This creative approach allowed me to practice the language dynamically, explore my imagination, and express myself artistically" (Student 18).

Learning English by designing my comic was extremely fun and unique. While creating the dialogues and the stories, I improved my vocabulary and practiced expressing ideas in English. I liked it because it was creative and exciting, not a task" (Student 21).

It is a methodology distinct from those seen before, which I find too engaging to forget. It helps us apply it in our careers, as accounting is not limited to Peru but also exists in other countries. Moreover, we learned new terms and practiced writing and pronunciation (Student 23).

It is somewhat fun and helps you become self-taught as we make sense of the grammar and history of English, review tenses, and improve pronunciation. However, since it is a task we undertake ourselves, we might take our learning lightly; yet, it remains efficient. (Student 29).

"It is a fun and easy way to learn English, as you can express your emotions through the drawings you create in the comics" (Student 43).

"Fun and educational, I was able to propose my character's plot and abilities many times. I hesitated several times, but it was easy to adapt it to the context of my career and fun because, being a special ability, I could explore its application without limits; there was no one to tell me: "No, not like that," or "better like this, because it does not make sense." I liked it because I had freedom in this and the comic strip. The teacher's feedback was constructive, giving me clear direction and allowing me to complete the task satisfactorily" (Student 130).

"It was a fun experience; I had not drawn and painted in a long time and felt like a child. I would make another comic, this time with more characters and more situations" (Student 144).

Practically all the opinions about the developed project were very favorable; however, there were two opinions about its disadvantages.

"The teacher should have shown all the videos in class" (Student 28).

"Designing also has disadvantages. One of the challenges is that you need sufficient time to create them, which can become stressful when there are other courses and tasks to attend to. You can sometimes feel frustrated, especially when something new comes to mind. Additionally, you need some materials that are not accessible due to their cost" (Student 161).

IV. Discussion

The initial results related to improving English writing skills are associated with the proposal of creative writing, which commonly follows the writing taught by the teacher in the first stage, where grammar and spelling are essential. Students designing comics have the freedom to create situations and communicate them simultaneously. This context allows them to write with autonomy and motivation (Osorio et al., 2024). Pentury et al. (2020) note that any academic activity that fosters moments of creativity and imagination facilitates effective learning. Likewise, these authors cite comics as mediums for the mentioned conditions. In that sense, the interaction between the student, the teacher, and their peers makes the writing in these learning media as close as possible to the author's main idea. Aleshchanova et al. (2018) note that implementing a project that allows students to express their emotions and feelings in writing enables them to learn autonomously with reduced stress, which also becomes enjoyable.

The second quantitative part aims to categorize the participants in this study and their performance in the components of creative thinking. For this purpose, Ho et al. (2003) propose that this procedure aims to segment the study sample according to the similarities in their performance. This allows for subsequent work on the competency with lower performance, which is fluency, meaning the teachers have difficulties formulating and answering novel questions. One of the proposals in response to this reality is to promote problem-based learning, which leads students to solve contextual issues innovatively (Hmelo-Silver, 2004).

The third quantitative component of this study aims to develop a fitted model that partially explains the entire process through four constructs: EC, PA, CI, and LS. Goretzko et al. (2024) explain that several factors enable the generation of a model to describe a phenomenon. For this, situations such as the prior exploratory factor analysis (EFA) give us an idea of the feasibility of the subsequent confirmatory factor analysis (CFA). Likewise, the construction and design of the survey that leads to this step are primary requirements. They add that measures such as CFI, GFI, and TLI must be in ranges greater than or equal to 0.9.

To interpret the qualitative results, we would begin by explaining when a pedagogical strategy is innovative. For Modebelu and Duvie (2012), the strategy becomes innovative whenever we promote learning that aligns with students' contexts creatively and engagingly. On the other hand, Foster and Yaoyuneyong (2016) suggest that whenever teachers encourage students to communicate to solve everyday problems, they make the strategy innovative. In other words, when we contextualize academic content related to the future labor market and globalization, we can observe that students consider the teaching methodology innovative. Working with comics allows students to awaken their motivation and creativity, making it a different alternative to the traditional way of transmitting knowledge. This, in turn, leads students to categorize them as innovative tools for learning (Arı & Demir, 2023). Likewise, learning new terms and vocabulary is related to the fact that students seek to understand better the terms presented in the bubbles of

the comics they read. Therefore, they look up the meanings of the new terms motivated by the desire to understand the story read (Basal et al., 2016).

V. Conclusions

The present research concludes that a comic program enhances writing and oral expression skills in an English course for 183 university students. Likewise, segmentation through clustering generates four differentiated groups, considering the components of creative thinking. On the other hand, it is possible to create a model adjusted based on the four established constructs: EC, PA, CI, and LS. Finally, it is concluded that this program generates positive perceptions among the participants. Among the limitations identified are the requirement that many participants create the adjusted model (more than 200) and the participants' limited time, as they had to complete multiple tasks from other courses besides English.

Appendix

ITEM	STATEMENTS
1	Thanks to the "English & Comic" program, I have improved my English writing.
2	Thanks to the "English & Comic" program, I have improved my oral presentation (speaking).
3	I have improved my English grammar thanks to the "English & Comic" program.
4	Thanks to the "English & Comic" program, I have improved my pronunciation and fluency in English.
5	Thanks to the "English & Comic" program, I have lost my fear of speaking in front of my classmates.
6	Thanks to the "English & Comic" program, I have gained a deeper understanding of how English is applied to my field of work.
7	Thanks to the "English & Comic" program, my motivation to learn English has increased.
8	Thanks to the "English & Comic" program, I could unleash my creativity.
9	Thanks to the "English & Comic" program, my self-confidence increased.
10	In the program "English & Comic," I expressed my emotions.
11	The "English & Comic" program improved my autonomous learning (self-directed learning).
12	Yes, I would make a comic in English again after this experience.
13	In the comic, the character bears a resemblance to me.
14	In the comic, the character experiences something related to someone I know.
15	In the comic created, the character experiences something related to my professional career.
16	I can modify the beginning and the end of my comic.
17	I am proud of the character I created.
18	I could increase the number of characters in the story.
19	The comic is the best strategy for learning English I have ever had.
20	Creating a comic in English is not difficult.
21	Using comics to learn English can be fun at any age.
22	I want to share my comic with as many people as possible worldwide.
23	I like knowing that my comic is a handmade product.

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