ARTÍCULO ORIGINAL

Gac Méd Caracas 2023;131(Supl 3):S266-S275
DOI: 10.47307/GMC.2023.131.s3.3

Memes and its impact on strengthening students' critical reading skills

Los memes y su impacto en el fortalecimiento de las competencias en lectura crítica de los estudiantes

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SUMMARY

This article reports a study that aimed to determine the level of impact of a didactic strategy mediated by memes to strengthen critical reading skills in elementary school students. We worked with 38 sixth-grade students belonging to a Colombian educational institution. The research was carried out under a mixed approach, where the quantitative approach allowed to establish the variation of the student's performance through a pre and post-test. The qualitative approach was used to characterize the students' reading habits, to identify the type of memes they use on social networks, and to know their perception of the didactic strategy. The results show that the didactic strategy mediated by memes strengthened the students' critical reading skills since there was a high learning gain of 0.859. In addition, the students liked the way and the material with which the teacher oriented them. In conclusion, it can be said that the impact that the strategy mediated by memes had in the pedagogical planning, as well as in the structuring of the contents, the design of the didactic material, and the learning activities that were considered based on the needs and students' cognitive conditions.

Keywords: *Didactic strategy, critical reading skills, memes, teaching methods, learning methods, didactic material.*

RESUMEN

Este artículo reporta un estudio que tuvo por objetivo determinar el nivel de impacto de una estrategia didáctica mediada por memes para fortalecer las competencias en lectura crítica, en estudiantes de secundaria básica. Se trabajó con 38 estudiantes de sexto grado pertenecientes a una institución educativa colombiana. La investigación se ejecutó bajo un enfoque mixto, donde el enfoque cuantitativo permitió establecer la variación de los desempeños de los estudiantes a través de una pre y posprueba. El enfoque cualitativo se utilizó para caracterizar los hábitos de lectura de los estudiantes, identificar

DOI: https://doi.org/10.47307/GMC.2023.131.s3.3

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Recibido: 29 de marzo 2023
Aceptado: 30 de abril 2023

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el tipo de memes que emplean en las redes sociales y conocer su percepción frente a la estrategia didáctica. Los resultados muestran que la estrategia didáctica mediada por memes fortaleció las competencias en lectura crítica de los estudiantes, ya que hubo una ganancia de aprendizaje alta de 0,859. Además, a los estudiantes les agradó la manera y el material con el que fueron orientados por parte del docente. En conclusión, se puede decir que el impacto que tuvo la estrategia mediada por memes radicó en la planeación pedagógica, así como en la estructuración de los contenidos, el diseño del material didáctico y las actividades de aprendizaje que se consideraron con base en las necesidades y condiciones cognitivas de los estudiantes.

Palabras clave: *Estrategia didáctica, competencias en lectura crítica, memes, métodos de enseñanza, métodos de aprendizaje, material didáctico.*

INTRODUCTION

Critical reading is one of the skills that require a high degree of attention since, with them, the ability to enrich the knowledge that is detailed through writing is acquired. In addition, it allows the people who acquire them to be reflective, critical, and autonomous of thought (1). Likewise, critical reading improves comprehension since one learns to identify the main and secondary ideas and their relationships in the general structure of a text (2). Some authors point out that through critical reading, it is possible to promote critical thinking since it allows evaluation of the information received and based on it, forming opinions and own ideas (3).

Critical reading skills are fundamental since they allow the development of skills to analyze, evaluate and understand information in an objective and well-founded manner (4). In Colombia, the SABER 11 tests measure whether students have acquired critical reading skills through the following 3 criteria: identify and understand the contents that make up a text, understand how the parts of a text are articulated to give it a global meaning and reflect on a text to evaluate its content (5).

Currently, memes have gained great importance since they have become a trend among users through social networks. Memes emerge as a means of expression that allows the transmission of an idea, a concept, or a situation through graphic or textual representations. The content of memes is very diverse, and they usually resort to humor or irony to capture the public's attention to a particular theme or opinion (6). An interesting example of using memes occurred in Poland during the COVID-19 crisis, where they were promoted to disseminate news about care, precautions, and the state of the pandemic (7). Some authors have classified memes according to their format and typology: image memes, Internet faces, text memes, video memes, social memes, reflective memes, humorous memes, and situation memes (8).

Didactic strategies are defined as a set of actions by a teacher to carry out the teaching process more pleasantly and optimally for the student (9,10). Strategies designed according to the student's needs enrich the learning process, which is evidenced when the student: acquires a taste for learning, seeks to corroborate what has been learned, and shows good performance in the performance of the evaluations (11). In this sense, the teacher must design an innovative didactic strategy that captures the student's attention so that he is interested in learning (12).

This research aimed to design and validate a didactic strategy mediated by memes to determine its impact on strengthening critical reading skills in basic education students of a Colombian educational institution.

METHODS

The research is empirical-analytical, of an inductive type, and supported under the mixed approach to achieve the proposed objectives (13). The quantitative approach allowed us to statistically corroborate whether or not there was a learning gain and whether or not the meme-based didactic strategy contributed to strengthening students' critical reading skills. The qualitative approach served to know the students' perception regarding the implemented strategy, identify their use of memes, and characterize their reading habits.

The study population was 191 sixth-grade students from a public educational institution in Duitama-Colombia. The selected sample was

for convenience, considering 38 students of that educational level. Figure 1 shows the research methodology that consists of 5 stages, beginning with identifying the technical and pedagogical requirements of the didactic strategy and ending with its validation.

Regarding the measurement instruments, a pre-test and a post-test were used, considering that the dependent variable is the student´s critical reading skills. The independent variable is the didactic strategy mediated by memes used in the classroom.

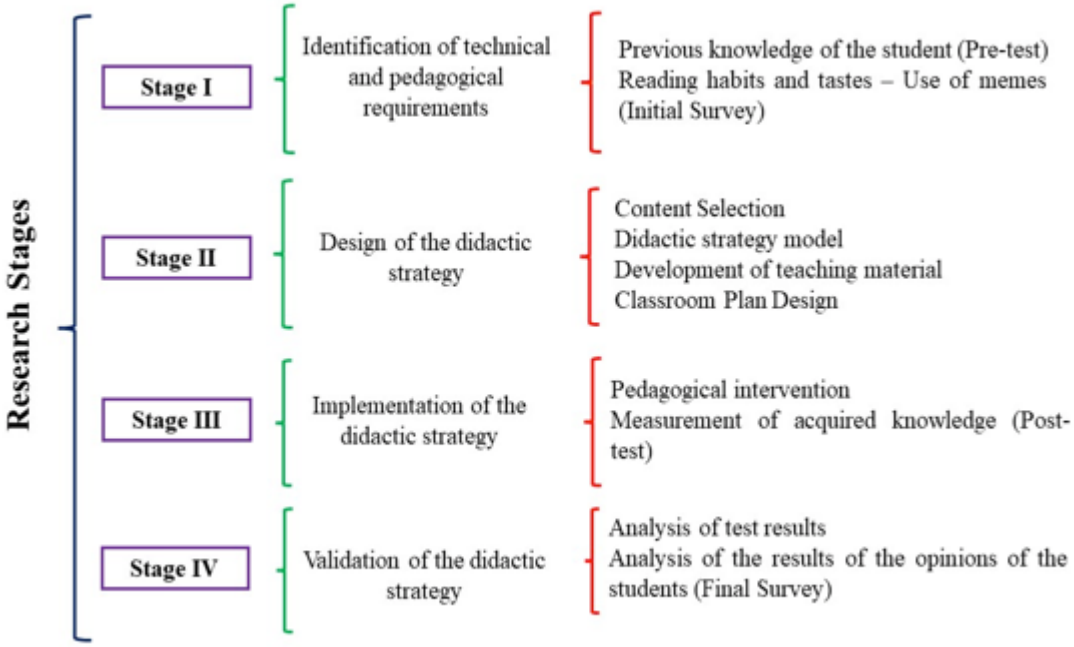

Figure 1. Research stages.

The collected data was analyzed using inferential statistics with the RStudio software (14). The normality of the data was determined using the Shapiro-Wilk test. The learning gain was calculated using the Hake factor (g), while the impact of the didactic strategy was determined using the Chi-Square statistical test.

RESULTS

Didactic strategy

The requirements of the didactic strategy were identified from a pre-test raised from the database of the Saber tests (5). The test consisted of 20 multiple-choice questions with a single answer, where 10 questions evaluated continuous texts and the other 10 discontinuous texts. Regarding the competencies, 6 questions measured the identification competency, 8 comprehension questions, and 6 reflection questions. The assessment of the test was made with the following scale: Superior (4.6 - 5.0), High (4.0 - 4.5), Basic (3.0 - 3.9), and Low (0 - 2.9).

In the pre-test, it was found that 26 of the 38 students failed it with a low level, 6 students passed with a basic level, 5 students with a high level, and only one student reached a higher performance level. Regarding the type of text,

it was evidenced that the discontinuous texts had the best performance (15 students passed), unlike the continuous texts, where only 11 students passed the test. The results of the pre-test by competencies indicate that the best performance was in identifying ideas in a text since 15 students passed it. In contrast, the competence with the worst performance was comprehension of the information presented in texts, since 33 students failed it with a low level.

Students' reading habits and use of memes were identified through a semi-structured survey. It was found that 29 students like history books, 5 fiction books, and 2 comics, and one student likes romance books. Regarding the frequency of reading per day, 16 students indicated that they read more than 2 hours, 12 read around 2 hours, 6 students read only one hour, and 4 students did not read. The book format students prefer digital (21), while the remaining 17 prefer the book on paper. Regarding memes, all students indicated that they know them and use them on social networks, like this: WhatsApp (30), Facebook (4), Telegram (3), and Instagram (1).

The previous results allowed us to propose the didactic strategy mediated by memes to enhance the comprehension in critical reading of the students, whose model is illustrated in Figure 2.

In the didactic strategy (Figure 2), there is the methodology, the pedagogical models, the units, the role of the teacher, the student, and the type of learning measurement that should be considered to strengthen critical reading skills. The strategy begins with the teacher explaining the topics discussed in class through the traditional model. Then the 4 proposed units are developed under the constructivist approach, where the teacher guides and motivates students to carry out the activities (15). The first two units deal with continuous and discontinuous texts. In the third unit, students learn to create memes using various computer tools so that, after reading a book, they summarize the story using memes. The fourth unit corresponds to training activities to practice what has been learned. The strategy ends with the evaluation of learning so that the teacher makes the respective feedback, based on the shortcomings found.

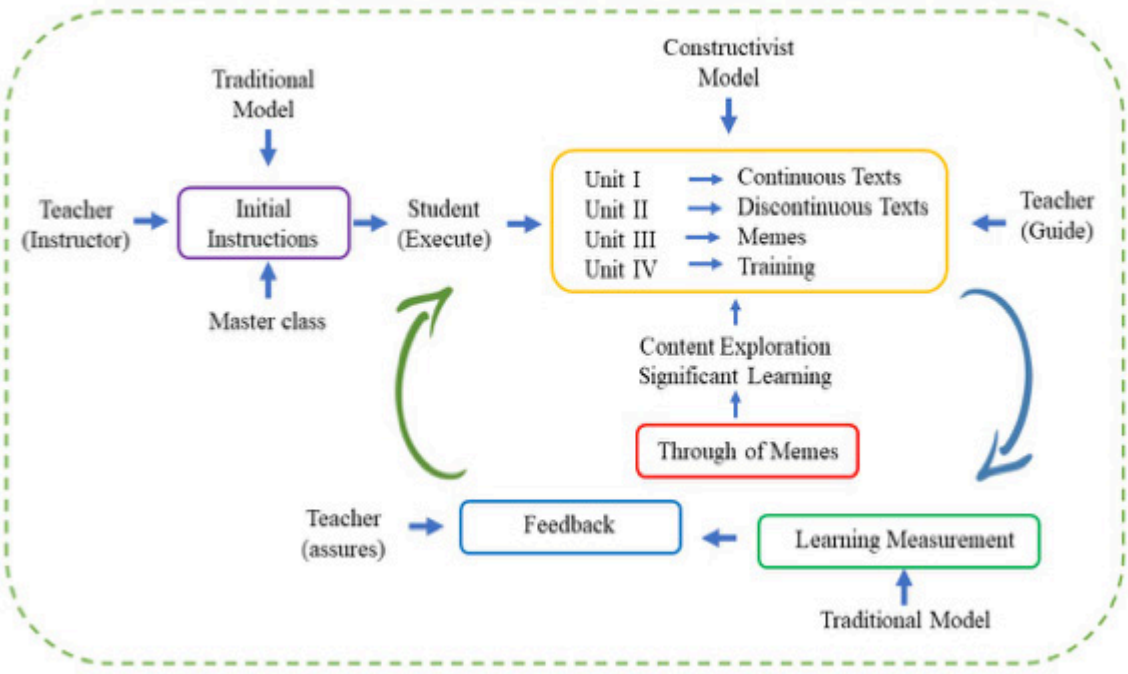

Figure 2. Model of the didactic strategy mediated by memes.

A didactic material was developed according to the cognitive needs of the students and their interests in using memes. A Digital Educational Resource (RED) programmed in the PowerPoint tool and the iSpring Suite complement. The RED allows the student to present the information in different formats and carry out activities such as questionnaires with multiple choice questions, true and false, relationship, drag and drop, timelines, and infographics.

The contents of the RED were structured in 2 sections, one for students and another for teachers. In the section for teachers, the classroom plans are presented to organize each unit´s teaching-learning process. In the student section, different activities were programmed to teach about continuous and discontinuous texts, the creation of memes, and training activities.

Classroom experience

The pedagogical intervention was carried out during 10 sessions of 45 minutes, in the subjects of Spanish language and technology and computer science, under the B-learning modality through Google Meet. Initially, the RED was shared with the students, and its functionality was explained. In addition, the general objective of the course was explained, which consisted of reading a literary work to synthesize the most important aspects through memes later. Before this activity, the students had to understand the techniques and strategies used to interpret the information presented in a book, extract the main and secondary ideas, and design and create memes using digital tools.

A web page was created so that students could share the results of the activities through a forum. In this sense, they talked about netiquette, respect for free opinion, censorship of inappropriate language, and copyright protection, essential aspects for a healthy coexistence on the Internet (16,17). Initially, the students showed little interest in the activities because, for the majority, reading was not a matter of their liking. However, exploring the RED and solving the different activities improved students' motivation for critical reading. From the sixth session, the students increased their interest in the subject. At this time, work began on creating memes, starting with drawing them in the notebook. Then some tools for creating memes were taught, such as quick memes, *Keep Calm Creator, Scrapee Imgflip, Meme Generator*, and *Rage Maker* (6). Next, the students digitized their memes and shared them with their classmates through the proposed forum.

In the final exercise, each student had to read one of the three proposed books: " Blue Moon: el espíritu del agua", "Rojo Blanco Sangre Azul", and "El chico de las estrellas" (18-20). Then they had to create a meme that synthesized the most relevant aspects of the book and later share them in the forum. If the meme was from the same book corresponding to it, the student could make the respective criticism. Otherwise, the student could be motivated by reading classmates' books to understand the memes' meaning better.

The classroom activity ended with the application of a survey to find out the students' perceptions of the implemented strategy. Likewise, a post-test with the same structure as the pre-test was applied to identify the improvement in critical reading skills of the 38 students. In the latter, it was established that only 1 student failed it, while 3 obtained a basic level, 13 a high level, and 21 a higher level.

Validation of the didactic strategy

The contingency table with the general results of the pre-test and the post-test is shown in Table 1. It is observed that the number of students who are located in the low-performance level decreased from 26 in the pre-test to only one student in the post-test. In addition, the upper level in the pre-test was only reached by one student, while in the post-test, 21 students obtained this level of performance. In other words, there was a considerable improvement in the performance obtained by the students in the post-test.

Table 2 shows an improvement in the performance for the 2 types of texts, since for the continuous texts, only 2 students failed the post-test, while the pre-test failed 24. In the discontinuous texts, there was also a significant improvement since in the post-test, no student obtained a low level, unlike the pre-test, where 27 students failed it.

Table 1. Comparison between pre-test and post-test results

Proof	Performance level			
	Low	Essential	High	Superior
Pre-test	26	6	5	1
Post-test	1	3	13	21

Source: the authors

Table 2. Results by text types

Types of text	Performance level			
	Low	Essential	High	Superior
Pre-test - Continuous	24	11	1	2
Post-test - Continuous	2	3	14	19
Pre-test - Discontinuous	27	7	3	1
Post-test - Discontinuous	0	1	11	26

Source: the authors

Regarding the competencies, Table 3 shows that identifying ideas from a text improved in the post-test since only 4 students failed it, unlike the 23 in the pre-test. The competence: understands the information presented in a text; it also denotes a significant improvement in the post-test since 29 students reached a higher performance level. In the pre-test, students still need to reach this performance. The competition reflects on the situations presented in the different texts; it also improved in the post-test because 11 students reached a high-performance level, while in the pre-test this same level was reached by only one student.

The normality of the data was established through the Shapiro-Wilk test under a confidence level of 95 % (21). The null hypothesis was H0 = the test score variable distributed, while the alternate hypothesis was Ha = the test score variable is not normally distributed. The Shapiro-Wilk normality test yielded a P-value of 0.3995 (P-value > 0.05), so the null hypothesis was accepted: the test score variable has a normal distribution.

In addition, the learning gain in the students was determined using the Hake factor (g) (equation 1), which establishes the ranges of learning gain based on the results between the percentage of correct answers in both the pre-test and post-test, as follows: Low ($g \leq 0.3$), Medium ($0.3 < g \leq 0.7$), and High ($g > 0.7$) (22).

$$g = \frac{Posttest\ (\%) - Prestest\ (\%)}{100\% - Pretest\ (\%))} \quad (1)$$

When calculating the Hake factor, it was considered that the maximum number of correct answers for each test was 760. In the pre-test, 242 (31.84 %) correct answers were obtained, while in the post-test, 687 (90.39 %)—correct answers. The Hake factor was 0.859, indicating a high gain in student learning in terms of critical reading skills.

Table 3. Results by competitions

Competence	Type of test	Performance level			
		Low	Essential	High	Superior
Identifies	Pre-test	23	9	5	1
	Post-test	4	8	11	15
Understands	Pre-test	33	4	1	0
	Post-test	2	2	5	29
Reflect	Pre-test	28	6	1	3
	Post-test	3	4	11	20

Source: the authors.

Additionally, it was validated if the didactic strategy mediated by memes influenced the population under study in terms of strengthening critical reading skills. This was done through the statistical contrast with Chi-Square, where the null hypothesis was H0 = The didactic strategy does not influence the strengthening of students' critical reading skills. The alternative hypothesis was that Ha = the didactic strategy does influence the strengthening of students' critical reading skills. The Chi-Square gave a value of 0.000789, so the null hypothesis was rejected, and the alternative hypothesis was accepted. That is, the didactic strategy mediated by memes did influence the strengthening of critical reading skills of the 38 sixth-grade students.

Regarding the opinion of the students on the didactic strategy mediated by memes, the results of the final survey were analyzed, which contained six questions on a Likert scale: Excellent, Good, Regular, and Bad. Table 4 shows that the students found the multimedia resources of the didactic material excellent, as well as the activities and design. The methodology used by the teacher to strengthen critical reading was liked by most of the students, except for one. Likewise, everyone liked the didactic strategy mediated by memes and indicated that it should remain the same since they consider it adequate to improve their critical reading skills.

Table 4. Final Survey Answers

Ask	Rating scale			
	Excellent	Well	Regular	Bad
The topics that were presented in the course were?	3. 4	3	1	0
The methodology used by the teacher to strengthen critical reading was	30	5	2	1
For the design of the Lectomeme resource, you consider the following:	35	2	1	0
The multimedia resources (images, videos, gifs, and memes) used in the didactic material seemed	38	0	0	0
The activities that appeared in the resource were	36	2	0	0
The appreciation you have regarding the games that appear in Lectomeme is:	3. 4	3	1	0

Source: the authors.

DISCUSSION

Developing the didactic strategy mediated by memes made it possible to strengthen the critical reading skills of the sixth-grade students who participated in the research. Was demonstrated in the statistical analysis of the knowledge tests since the pre-test failed 26 students, unlike the post-test, which failed only one. The Hake factor made it possible to identify that thanks to the didactic strategy mediated by memes, there was a high learning gain of 0.859 in critical reading skills. Likewise, the result of the Chi-Square statistical contrast allowed us to corroborate that the didactic strategy did influence the strengthening of students' critical reading skills.

The didactic strategy was also validated by the direct opinion of the students since there is no greater critic than the one who has been the protagonist of an event (23,24). The students indicated that the topics and the didactic material used to teach them were pertinent. They found it striking and innovative, unlike how the subject had been worked. The positive opinion of the students regarding the strategy and the didactic material developed, as well as the statistical evidence in the improvement of learning, allow us

to affirm that the research objective was fulfilled.

The preceding confirms the findings of other researchers, related to the fact that the success of didactic strategies in the teaching-learning processes is due to the preliminary considerations of the teacher in terms of the knowledge, abilities, and skills that their students present (25,26). Didactic material plays a fundamental role in this process. Its design should consider, among others, the following aspects: a structure accessible to all students, regardless of their physical or mental condition (27-29); incorporate activities and elements of their daily life, memes in this case (30); be well organized so that students can explore the contents without any restriction or limitation (31). In addition, educational materials must have learning activities for the student to put into practice what they have learned and, if there are difficulties, receive feedback (32).

In the initial survey, students indicated that they read several hours a day, but the pre-test results showed the opposite. The observation and listening of the students in the classroom allowed us to establish that they read but could not understand the information transmitted in the texts. In this sense, some researchers in the Spanish language area indicate that the current educational system focuses on strengthening students' spelling and grammar rather than on their comprehension of texts, which means that tests of state perform poorly (33).

The proposal of multiple didactic strategies to guide the contents of an area of knowledge, even for the same subject, is common (34-36). So many teaching strategies exist because each population is different, even though the content taught is the same. In other words, each student is a universe that feels and thinks differently based on their environment and mental structures, so teachers must design teaching strategies based on the needs of their students (37).

Finally, the pedagogical intervention was carried out in a unified way in Spanish language, technology, and computer science, which was fine for the students. In this sense, transversality becomes an alternative for the design of didactic strategies since it allows the acquisition of interdisciplinary skills (38). In other words, students acquire knowledge, skills, and abilities that allow them to face the challenges of an increasingly complex and interconnected society (39,40).

CONCLUSIONS

In this research, the positive impact of a didactic strategy mediated by memes was verified to strengthen critical reading skills in 38 sixth-grade students from a Colombian educational institution. The quantitative analysis showed a high learning gain of 0.859, consistent with the improvement in the performance levels in the post-test.

The students recognized that the didactic strategy mediated by memes was pleasant, attractive, and relevant. Indicates that the success of the didactic strategy was related to its design, the contents, the pedagogical models implemented, the learning activities, and the didactic material produced. In addition, the transversality in the subjects of Spanish language and technology and computer science allowed students to learn differently than the traditional one.

In summary, just as the world evolves thanks to scientific and technological advances, the educational system requires major transformations concerned with improving the training processes, bringing elements of the new reality into the classroom, such as memes.

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