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ORIGINAL

Use of Wayuu myths and legends supported by multimedia applications to strengthen reading and writing skills

Uso de los mitos y leyendas Wayuu apoyados en aplicaciones multimedia para fortalecer la lectoescritura

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ABSTRACT

The objective of this research was to evaluate the effectiveness of using Wayuu myths and legends supported by multimedia applications to strengthen literacy skills in 5th-grade students. The research was descriptive, evaluative, and comparative with a quasi-experimental, cross-sectional design. The population consisted of 37 students, forming an intentional sample of students who completed the 5th grade. A single group of students organized by the educational institution was worked with, to whom a pretest and posttest were applied. The data collection technique was direct observation, using a 18-item knowledge test, with dichotomous, simple selection. Reliability was calculated using the K-20 coefficient of Kuder-Richardson, obtaining 0,82, which is considered highly reliable. The results were analyzed using the Wilcoxon (Z) statistic. In conclusion, it was found in the diagnosis that students show significant differences in the levels of literacy learning when applying the pretest and posttest, and that the use of Wayuu myths and legends supported by multimedia applications improved the levels of literacy learning. It is recommended that teachers use these strategies to improve literacy skills in their students.

Keywords: Literacy; Multimedia learning; Legends; Myths; Wayuu.

RESUMEN

Esta investigación tuvo como objetivo evaluar la efectividad del uso de los mitos y leyendas wayuu apoyados en aplicaciones multimedia para fortalecer la lectoescritura en los estudiantes del grado 5° de la básica primaria. La investigación fue de tipo descriptiva, evaluativa, comparativa con diseño cuasiexperimental, transeccional descriptiva, de campo. La población estuvo conformada por 37 estudiantes, formando una muestra intencional de alumnos que cursaron el 5° grado. Se trabajó un solo grupo de estudiantes organizados por la institución educativa, a los cuales se les aplico un Pretest y Postest. La técnica de recolección de datos fue la observación directa, aplicando una prueba de conocimiento de 18 ítems, dicotómicas, selección simple. La confiabilidad se calculó con el coeficiente K-20 de Kuder-Richardson, obteniendo 0,82, siendo de Muy alta confiabilidad. El análisis de los resultados se realizó mediante el estadístico Wilcoxon (Z). Como conclusión se obtuvo en el diagnóstico, que los estudiantes al aplicarles el Pretest y Postest presentan diferencias significativas entre los niveles de aprendizaje en Lectoescritura; el uso de los Mitos y Leyendas Wayuu apoyados en aplicaciones multimedia mejoraron los niveles de aprendizaje de la Lectoescritura. Se recomendó que los docentes utilizaran estas estrategias para mejorar la lectoescritura en sus estudiantes.

Palabras clave: Lectoescritura; Aprendizaje Multimedial; Leyendas; Mitos; Wayuu.

INTRODUCTION

The Wayuu culture, like other cultures, seeks to strengthen its education and traditional way of life through rules and processes that ensure their ethnic stability. Through their own education, they aim to reaffirm their cultural identity, which has been preserved through oral traditions, with descendants learning the logical principles of their ancestral cultural roots from their ancestors.[1]

Wayuunaiki is the language of the Wayuu (Guajiros) ethnic group, originally from the region known as the Guajira peninsula, which officially belongs to both Venezuela and Colombia. It is one of the liveliest and most widely spoken languages belonging to the Arawakan linguistic family, the most extensive and important language family in South America.[2]

Indigenous stories are an important part of Wayuu culture and include myths, legends, poems, riddles, taboos, dreams interpretations, and literary figures. Multimedia applications can be a useful tool for children to learn these stories and their cultural values, and help with their literacy development.[3,4]

Multimedia technologies have been shown to be effective in teaching and learning, including in the teaching of language to children. However, there is a lack of written material in the Wayuu language, which poses a challenge for literacy development.[5,6]

Creating new virtual spaces that take the place of traditional institutions like school and family, and incorporating multimedia applications, can help children learn about their cultural heritage and improve their cognitive skills.[7,8]

Teachers have acknowledged the problem of poor literacy in Colombia, which is reflected in poor performance on national assessments. However, efforts to address this issue are not sufficient.

In previous research,[9] our research group proposed and implemented an instructional design that links the use of Wayuu myths and legends supported by multimedia applications to strengthen students' reading and writing skills. This instructional design includes a set of activities, processes, and resources, including a blog where students could consult activities and interact with each other and the teacher.

Therefore, research is necessary to create new strategies that can improve the learning conditions of students and motivate them to learn, including the use of multimedia applications to support learning and the incorporation of Wayuu myths and legends into literacy instruction.

The objective of the research is to evaluate the effectiveness of using Wayuu myths and legends supported by multimedia applications to strengthen the literacy skills of 5th-grade students at the educational institution No. 4 in the San Jose district of the Maicao La Guajira Municipality, Republic of Colombia.

METHODS

A descriptive and evaluative research was conducted to compare the effectiveness of Wayuu myths and legends supported by multimedia applications to strengthen literacy skills in the control and experimental groups of children. It is worth noting that the search criteria applied to generate results were highly objective to ensure their reliability.

This study follows a quasi-experimental, descriptive and field transectional design. 37 students from the two sections of 5th grade of Basic Education No. 4, San Jose campus in Maicao, La Guajira (Republic of Colombia), were selected as part of the sample, corresponding to an intentional non-probabilistic sample.

For data collection, a mixed knowledge test was designed (checklist, simple and open-ended options). It was designed to be answered in writing, with 18 specific items that assess literacy skills: Speed, Quality, Literal Level, Inferential Level, Critical Level, Legibility, Coherence, Spelling, and multimedia applications: Video, Text, and Audio.

Each question in the questionnaire was assigned a score of 1 for the correct answer and 0 for an incorrect answer. Considering that three questions were posed for each learning indicator or level, accumulating a maximum of 3 points, a scale was developed for the interpretation of the means of the results of the knowledge test applied in the pretest and posttest to the students who formed the study population. Likewise, a scale was developed for evaluating the result of the Speed and Quality (Table 1 and Table 2).

Table 1. Scale for the Interpretation of the Mean

Categories	Ranks
Very Efficient	0,81 - 1,00
Efficient	0,61 - 0,80
Acceptable	0,41 - 0,60
Poor	0,21 - 0,40
Very Deficient	0,00 - 0,20

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Table 2. Scale to evaluate reading speed

Levels	Number of words per minute
Fast	Above 124
Optimum	Between 115 and 124 words per minute
Slow	Between 100 and 114
Very slow	Below 100

Table 3. Scale to evaluate reading quality

Feature	Level
***This level is not evaluable at this grade level, this must have been passed in previous grades.	A
The student reads without pauses or intonation; he/she reads word by word, without respecting the units of meaning (sentences).	B
In reading by short units, the student already joins words to form meaningful sentences, pauses, but there are still pronunciation errors (omissions, accent anomalies) and intonation.	C
The student reads continuously, pauses, and presents intonation appropriate to the content. He/she respects the units of meaning and punctuation. Few pronunciation errors (omissions, accent anomalies) are perceived.	D

The validation process included 6 experts. Reliability was calculated using the K-20 coefficient of Kuder-Richardson, as recommended by Hernández Sampieri et al.[10] for the dichotomous type instruments since the knowledge test had only two possible responses: correct and incorrect. The obtained result was 0,824, which falls within the range of high reliability according to the scale established by Ruiz.[11]

The variable under study is related to the use of Wayuu myths and legends supported by multimedia applications to strengthen literacy, which has been structured into a dimension, and the indicator chosen in this case.

RESULTS AND DISCUSSION

As shown in table 4, first the mean results of the scores achieved in each dimension indicator are displayed, which were interpreted according to the scale. The table shows that for the Pretest group, the mean of the dimension was 0,54, a value that when placed on the dimension scale, indicates that it is in the acceptable category.

Table 4. Results of the dimension

Indicator	Pretest		Posttest	
	Average	Category	Average	Category
Speed	0,34	Deficient	0,82	Very Efficient
Quality	0,61	Efficient	0,70	Efficient
Literal Level	0	Very Poor	0	Very Deficient
Inferential Level	0	Very Poor	0	Very Deficient
Critical Level	0,35	Poor	0,70	Efficient
Readability	0,68	Efficient	0,78	Efficient
Coherence	0,95	Very Efficient	0,95	Very Efficient
Spelling	0,32	Poor	0,68	Acceptable
Video	0,84	Very Efficient	1,00	Very Efficient
Text	1,00	Very Efficient	1,00	Very Efficient
Audio	0,86	Very Efficient	1,00	Very Efficient
Dimension average	0,54		0,69	
	Acceptable		Efficient	

Source: Own elaboration.

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The dimension of the Posttest group was analyzed, and it was observed that the mean was 0,69, corresponding to the Efficient category when compared with the grading scale. This result indicates a substantial improvement in the literacy skills of the students in this group. This is consistent with Terborg y García Landa[12] statement that literacy is a development that requires the ability to read and write, the recognition of which is essential to achieve proper writing, suggesting its consolidation when the comprehension of what is read is demonstrated and, in line with this, reflected in writing in a coherent manner.

It is convenient to present detailed results of correct and incorrect responses for each of the study groups to provide more detailed information. To this end, this description begins with the results of the Pretest, which are shown in the following table 5.

Table 5. Results of the group in pretest (Speed and Quality Indicator)

Indicator	Alternatives	No.	%	Mean of the variable	Interpretation of the mean
Speed	Fast	2	5,40	0,48	Acceptable
	Optimal	2	5,40		
	Slow	3	8,10		
	Very slow	30	81,10		
	Indicator average		0,34		
Quality	A	1	2,70		
	B	20	54,10		
	C	14	37,80		
	D	2	5,40		
	Indicator mean		0,61		

Source: Own elaboration

Based on the results shown in Table 5, for the indicator "Speed," 2 students were placed in the "Fast" alternative, 2 in "Optimal," 3 in "Slow," and 30 in "Very Slow," achieving 5,40 %, 5,40 %, 8,10 %, and 81,10 %, respectively, which resulted in a mean of 0,34, placing it in the "Poor" category according to the scale. As for the definition of each alternative for this indicator, 30 students read just below 100 words per minute, denoting low performance in the reading speed level among the student population, with only 2 students reading above 124 words per minute.

Moving on to the "Quality" indicator, the following results were obtained: 1 in alternative A, 20 in B, 14 in C, and 2 in D, achieving 1 %, 20 %, 14 %, and 2 %, respectively, resulting in a mean of 0,61, which according to the scale is in the "Efficient" category, with a higher result than the "Speed" indicator. Both indicators resulted in a mean of 0,48, placing them in the "Acceptable" category.

Regarding the definition of alternatives, according to the scale, 34 students (20-14) are in Level B and C, respectively, indicating that students recognize words, ranging from reading slowly without respecting sentences to fluid reading while respecting grammar rules. These data suggest that the reading level achieved by students has few critical knots, and with consistency and motivation, they can reach the highest level (D).

This is contrary to what Torres Morales et al.[13] expressed, stating that educational processes must strengthen reading comprehension by starting with learning to read with accuracy and speed, achieved through cognitive strategies that develop perception, attention, memory, and phonological awareness processes. Reading comprehension is fundamental for acquiring new learning in basic education and throughout life.

As can be seen in table 6, the absolute and relative frequencies of the indicators are presented first: Literal Level, Inferential Level, and Critical Level, obtaining the following results: for the Literal Level indicator, 0 were located in the Complies alternative, 37 in the Does Not Comply alternative, reaching 0 % and 100 % respectively. These data reflect that all students who make up the study population answered one or none of the questions about locating specific information in a text, and are not capable of evaluating whether the text is useful to them.

Regarding the Inferential Level, all were found in the Does Not Comply alternative. These data show that the students who make up the study population are not capable of inferring, extracting, or interpreting the ideas that are embedded or hidden in the text or discourse.

Moving on to the Critical Level, 13 were located in the Complies alternative and 24 in the Does Not Comply alternative, reaching 35,10 % and 64,90 % respectively. This shows that the majority of students did not reach the level of comprehension and subsequent evaluation of the text, establishing a critical position and issuing a value judgement, whether they agree or disagree with what the author expresses.

Consequently, the results shown produced a mean of 0,12, which according to the scale, falls into the Very Poor category. This means that these students have a very low, incomplete mastery, and do not show the necessary skills of acuity in reading the text for a deep understanding of the content read.

This is contradictory to what Bravo Valdivieso[14] expressed, stating that the fundamental difference that distinguishes someone who knows how to read from someone who does not is the ability to attribute a precise meaning to each of the written words. A child who does not know how to read does not understand, while the one who already knows how to read understands the meaning of the alphabet signs. This process of understanding is a verbal process that involves the comprehension of explicit messages in writing.

Table 6. Group results in the pretest (Literal, Inferential and Critical Level Indicator)

Indicator	Alternatives	No.	%	Variable mean	Interpretation of the mean
Literal level	Complies	0	0	0,12	Very deficient
	Does not comply	37	100		
Inferential level	Complies	0	0		
	Does not comply	37	100		
Critical level	Complies	13	35,10		
	Does not comply	24	64,90		

Source: Own elaboration

As can be seen in table 7, the absolute and relative frequencies of the indicators are presented first: Readability, Coherence, and Spelling, obtaining the following results: for the Readability indicator, 25 were located in the Yes alternative, demonstrating mastery of the graphic part of the letter, showing legible writing with identifiable strokes, while 12 were placed in the No alternative, indicating that they do not meet these skills, reaching 67,60 % and 32,40 %, respectively.

Table 7. Group results in the pretest (Readability, Coherence and Spelling Indicator)

Indicator	Alternatives	No.	%	Variable mean	Interpretation of the mean
Readability	Yes	25	67,60	0,65	Efficient
	No	12	32,40		
Consistency	Yes	35	94,60		
	No	2	5,40		
Spelling	Yes	12	40,32		
	No	25	67,60		

Source: Own elaboration

Regarding Coherence, 35 were located in the Yes alternative, ideas are expressed clearly and continuously, paragraphs are connected with respect to the central idea, while 2 were located in the No alternative, indicating that they do not meet these capacities, manifesting difficulty in connecting ideas and maintaining coherence in the written piece, reaching 94,60 % and 5,40 %, respectively.

Finally, for the Spelling Indicator, 1 was located in the Yes alternative, using and applying the grammatical rules of the language, and 24 were placed in the No alternative, inferring that students show many difficulties in correct writing, reaching 40,32 % and 67,60 %, respectively. This produced a mean of 0,65, which according to the scale (see table 3), falls into the Efficient category.

Next, the results of these indicators are presented, after applying the Wayuu tales and legends supported by multimedia applications to the students who make up the population of this research. For this, just like in the Pretest, the same instrument was applied in the Posttest to measure the reading and writing skills possessed by the surveyed students.

In table 8, the absolute and relative frequencies of the indicators Speed and Quality are presented first, obtaining the following results: for the Speed indicator, 23 were located in the Fast alternative, 2 in the Optimum alternative, 12 in the Slow alternative, and 0 in the Very Slow alternative, reaching 62,20 %, 5,40 %, 32,40 %, and 0 %, respectively. This produced a mean of 0,82, which according to the scale, falls into the Very Efficient category.

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Table 8. Results of the group in the Posttest (Speed and Quality Indicator)

Indicator	Alternatives	No.	%	Variable mean	Variable mean
Speed	Fast	23	62,20	0,76	Efficient
	Optimal	2	5,40		
	Slow	12	32,40		
	Very slow	0	0		
	Average of the indicator		0,82		
Quality	A	0	0		
	B	12	32,40		
	C	21	56,80		
	D	4	10,80		
	Indicator mean		0,70		

Source: Own elaboration

These results show that with the application of Wayuu tales and legends supported by multimedia applications, there was an improvement in the reading speed of the students, compared to the Pretest, which is supported by the mean obtained that went from 0,34 in the Pretest located in the Deficient category, to 0,82 in the Very Efficient category in the Posttest.

Continuing with the Quality indicator, the following results were obtained: 0 located in alternative A, 12 in B, 21 in C, and 4 in D, reaching 0 %, 12 %, 21 %, and 4 %, respectively. This produced a mean of 0,70, which according to the scale, falls into the Efficient category. The result is lower than the Speed indicator but with higher results in both indicators than those obtained in the Pretest. Both indicators produced a mean of 0,76, which falls into the Acceptable category, also higher than in the Pretest.

These results show that most students show an improvement located in the C category, joining words to form sentences with meaning, making pauses, but there are still errors in pronunciation and intonation. In addition to this, there are 4 students who present an adequate intonation to the content, respecting the units of meaning and punctuation. Similarly, there is an increase in the mean, located in 0,61 in the Pretest and 0,70 in the Posttest, both falling into the Efficient category.

It is important to highlight that the results reflect an increase in the range of the mean of both indicators, which in the Pretest was 0,48, located in the Acceptable category, and in the Posttest was 0,76, located in the Efficient category. As a corollary, it can be deduced that the students show efficient performance in the speed and pronunciation of reading the text.

As can be seen in table 9, the absolute and relative frequencies of the indicators: Literal Level, Inferential Level, and Critical Level are presented first, obtaining the following results: for the Literal Level indicator, 0 were located in the Complies alternative and 37 in the Does Not Comply alternative, reaching 0 % and 100 %, respectively; for the Inferential Level, 0 were located in the Complies alternative and 37 in the Does Not Comply alternative, reaching 0 % and 100 % respectively; finally, for the Critical Level, 26 were located in the Complies alternative and 24 in the Does Not Comply alternative, reaching 70,30 % and 29,70 %, respectively. This produced a mean of 0,23, which according to the scale, falls into the Deficient category.

The results show that there was no observable improvement for the Literal and Inferential levels, while a slight recovery is observed for the Critical Level, compared to the Pretest.

Table 9. Group results in the Post-test (Literal, Inferential and Critical Level Indicator)

Indicator	Alternatives	No.	%	Variable mean	Interpretation of the average
Literal level	Complies	0	0	0,23	Deficient
	Does not meet	37	100		
Inferential level	Complies	0	0		
	Does not meet	37	100		
Critical level	Complies	26	70,30		
	Does not meet	11	29,70		

Source: Own elaboration

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The absolute and relative frequencies of the indicators: Readability, Coherence, and Spelling are presented (table 10), obtaining the following results: for the Legibility indicator, 29 were located in the Yes alternative and 8 in the No alternative, reaching 78,40 % and 21,60 %, respectively. In relation to the Pretest, 4 more students demonstrated mastery of the graphical part of the letter, showing legible writing with identifiable strokes.

Regarding Coherence, 35 were located in the Yes alternative and 2 in the No alternative, reaching 94,60 % and 5,40 %, respectively. The results show that there was no change in this indicator between the Pretest and Posttest; the students express ideas clearly and continuously, connecting paragraphs with the central idea.

Regarding the Spelling indicator, 25 were located in the Yes alternative and 12 in the No alternative, reaching 67,60 % and 32,40 %, respectively. The results clearly show that a greater number of students have acquired the ability to write correctly according to the orthographic characteristics of words. The mean of these indicators was 0,80, which according to the scale, falls into the Efficient category, the same as in the Pretest, but higher than in the Pretest.

Table 10. Results of the group in the Post-test (Readability, Coherence and Spelling Indicator)

Category	Alternatives	No.	%	Variable mean	Interpretation of the average
Readability	Yes	29	78,40	0,80	Efficient
	No	8	21,60		
Consistency	Yes	35	94,60		
	No	2	5,40		
Spelling	Yes	25	67,60		
	No	12	32,40		

Source: Own elaboration

The second purpose of this research was to characterize multimedia applications to strengthen reading and writing skills in students. The results were interpreted and analyzed in both the pretest and posttest. The data from table 11 show that video not only serves to motivate and encourage students in class, but also to create a participatory dynamic and improve certain expressive and perceptive skills.

Table 11. Results of the Pretest group (Indicator Video, Text and Audio)

Indicator	Alternatives				Average	Interpretation of the average
	Yes		No			
Video	31	83,80	Very efficient	16,20	0,90	Very efficient
Text	37	100,00	0	0,00		
Audio	32	85,60	5	14,40		

Source: Own elaboration.

Regarding the Text, the data provided show that the inclusion of text in multimedia applications allows for the development of reading comprehension, visual discrimination, verbal fluency, vocabulary, among others.

Regarding the Audio, 85,60 % of the responses were affirmative. These results show that music and sound effects are essential to achieve a motivating effect, capturing the student's attention.

These results are in line with what Amaya[15] expresses when he states that multimedia applications are a combination of elements (text, video, animations, and audio) that allow for the transmission of information in a visual, auditory, dynamic, and practical way that can be of great utility in the learning process of students.

The results from table 12 show without a doubt that these indicators are essential for better student performance in their learning.

Tables 13 and 14 show the Wilcoxon statistic (Z) and its bilateral critical level (Bilateral Asymptotic Sig.). Since most of the critical values are less than 0,05, the null hypothesis of equal means (H0) can be rejected, and it can be concluded that the compared indicators differ significantly. In cases where H0 cannot be rejected because the level of significance is greater than 0,05, it indicates that there are no differences between the indicators in the dimension (Speed, Quality, Literal, Inferential, Critical, Readability, Coherence, Orthography, Video, Audio, and Text).

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Table 12. Results of the Posttest group (Video, Text and Audio Indicator)

Indicator subjects	Alternatives				Average	Interpretation of the average
	Yes		No			
Video	37	100	0	0		
Text	37	100	0	0	1,00	Very efficient
Audio	37	100	0	0		

Source: Own elaboration.

Table 13. Wilcoxon statistic (Z) Sig Asintotic (Bilateral)

	Post test speed - Pres test speed	Post-test quality - pre-test quality	Literal post 1-3 - literal pres 1-3	Inferential post 4-6 - inferential pres 4-6	Critique post 7-9 - critique pres 7-9	Legibility post 19-21 - legibility pres 19-21	Coherence post 22-24 - coherence pres 22-24	Spelling post 25-27 - spelling pres 25-27
Z	-5,143[b]	-2,828[b]	0,000[c]	0,000[c]	-3,606[b]	-2,000[b]	0,000[c]	-3,606[b]
Asymptotic sign (bilateral)	0,000	0,005	1,000	1,000	0,000	0,046	1,000	0,000

a. Wilcoxon signed-rank Wilcoxon test

b. It is based on negative ranges.

c. The sum of negative ranks equals the sum of positive ranks.

Table 14. Wilcoxon statistic (Z) Sig Asintotic (Bilateral)

	Video total post - video t pre	Total text post - total text pre	Audio total post - audio total pre
z	-2,972[b]	0,000[c]	-2,889[b]
Asymptotic sign (bilateral)	0,003	1,000	0,004

a. Wilcoxon signed-rank Wilcoxon test

b. It is based on negative ranges.

c. The sum of negative ranks equals the sum of positive ranks.

CONCLUSIONS

In this study, in relation to the diagnosis of reading and writing skills of the selected students as the population, it was found that the results, according to the criterion, were acceptable, which leads to the conclusion that the students have a plausible development of reading and writing skills.

Regarding the characterization of multimedia applications to strengthen reading and writing skills in students, it was found that the results, according to the criterion, were efficient, reflecting that these indicators are well performed by the students in the study population.

In terms of reading and writing skills before the use of Wayuu myths and legends supported by multimedia applications, the data showed a deficient level, according to the criterion, with a mean of 0,40, while multimedia applications had a very efficient level with a mean of 0,90. This indicates that audio, video, and text skills are widely developed among the students.

Therefore, the students showed a considerable level of learning in reading and writing skills after the use of Wayuu myths and legends supported by multimedia applications.

Finally, when comparing the reading and writing skills of the students before and after the use of Wayuu myths and legends supported by multimedia applications, the difference between the Pretest and Posttest scores was evident. The statistical comparison using Wilcoxon (Z) and its bilateral critical level (Asymptotic bilateral Sig.) indicated that both moments had different levels of reading and writing skills, leading to the acceptance of the hypothesis of different means, concluding that the compared indicators are different.

FUTURE PERSPECTIVES AND RECOMMENDATIONS

Based on the results of this study, it is recommended that teachers propose practical activities for students using Wayuu myths and legends to improve their reading and writing skills, supported by multimedia applications (video, audio, and text). This approach should not only focus on memorizing and repeating words, but also on applying more complex cognitive processes such as understanding, analyzing, and evaluating.

For school management, it is recommended to provide training for teachers on the use of Wayuu myths and legends, supported by new information and communication technologies as a learning resource (audio, video, and text) for reading and writing. In addition, teaching practices should be updated by breaking away from traditional teaching methods of memorizing and repeating letters and words.

The school management is recommended to promote the use of multimedia tools that complement the work done in the classroom, by designing instructional strategies to promote reading and writing levels in students, who in general were found to have deficient performance levels in the diagnostic study.

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CONFLICTS OF INTEREST

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AUTHOR CONTRIBUTIONS

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