How to Cite
Aragundi-Rivas, P. M., Mejía-Vera, J. L., & Alcívar-Castro, E. (2025). The use of the Word Wall in teaching and learning division in middle school students. *International Journal of Business, Economics and Management*, *8*(3), 108-114. https://doi.org/10.21744/ijbem.v8n3.2405

The Use of the Word Wall in Teaching and Learning Division in Middle School Students

Pedro Manuel Aragundi-Rivas
Universidad Laica Eloy Alfaro de Manabí, Chone, Manabí, Ecuador
Corresponding author email: e1313352872@live.uleam.edu.ec

José Luis Mejía-Vera
Universidad Laica Eloy Alfaro de Manabí, Chone, Manabí, Ecuador
Email: e1313546077@live.uleam.edu.ec

Eddie Alcívar-Castro
Universidad Laica Eloy Alfaro de Manabí, Chone, Manabí, Ecuador
Email: eddie.alcivar@uleam.edu.ec

Abstract---*The objective of this research was to analyze the impact of the use of the teaching tool Word Wall in the teaching-learning process of division, using a quasi-experimental design, with middle school students from the Cinco de Mayo Fiscomisional Educational Unit, located in the Chone canton. For the development of the study, inductive, deductive, and descriptive methods were used, with a mixed approach. The main technique was a questionnaire, used in both the pretest and posttest, to analyze and interpret the results obtained from two groups: one experimental and one control. The research arose from the problem of the scarce incorporation of innovative teaching resources by teachers and their limited adaptation to the current educational context. The results of the pretest reflected similar means between both groups, with 3.36 for the control group and 3.38 for the experimental group, indicating that there were no significant differences in prior knowledge about division. However, after the pedagogical intervention, the post-test results showed a notable difference: the experimental group achieved an average of 5.74, while the control group obtained an average of 3.83. These data demonstrate that the use of Word Wall had a positive and significant effect on division learning. In conclusion, this teaching strategy was effective not only in improving students' academic performance but also in motivating them and generating a more favorable attitude toward learning a subject that often presents difficulties at this stage of school.*
Keywords---*division, teaching learning, teaching tool, Word Wall.*

Introduction

One of the most palpable problems evident in the educational system is the lack of motivation among students when it comes to learning mathematics, because the strategies used by many teachers in the teaching process of this subject are outdated. About the previous idea, many teachers have not had pedagogical training or have not updated their methodologies. Consequently, the development of mental processes specific to learning mathematics is not encouraged. According to Mejía (2022), the epistemology of Mathematics promotes the generation of knowledge from the active participation of all students in practical activities and exercises, developing analysis and logic that lead to the resolution of posed problems (p. 21).

It should be noted that children's inability to perform basic operations often goes hand in hand with pedagogical obsolescence and a deterioration in the teacher-student relationship. Furthermore, constant setbacks demotivate children, resulting in a loss of interest. According to Noro (2019), obsolescence is the wear and tear, the loss of

ISSN 2632-9476
Submitted: 27 May 2025 |Revised: 18 June 2025 | Accepted: 09 July 2025

effectiveness and functions, as well as the progressive deterioration of methodologies that become obsolete and require replacement by more effective ones (p. 3).

It should be noted that several factors discourage student participation and interest in learning mathematics. On the other hand, there is a lack of pedagogical training or updating among teachers regarding the use of virtual tools, which creates an unfavorable teaching environment. Therefore, teachers must relate their activities to didactic strategies based on the use of virtual tools to improve the teaching of this subject. In this regard, Martínez (2021) points out that it is necessary to transform teaching practices to change the traditional paradigm that has historically dominated mathematics teaching, centered on mechanization and the absence of contexts (p. 396).

Hence, the importance of research, since, in every educational process, activities related to teaching require a certain degree of organization through curricular planning processes, which must be supported by the appropriate methodologies, tools, and teaching resources so that students can learn appropriately. According to Sandoval (2020), the teaching process requires organization and planning; in this order of ideas, the planning of pedagogical activities requires thinking about the most appropriate methodology and resources so that the programmatic contents can be developed in students in an appropriate manner (p. 26).

In this regard, the objective stated in the research is related to: Analyzing the influence of the use of Word Wall in the teaching-learning process of division in the learning of mathematics in fifth-year students of the Fiscomisional Cinco de Mayo Educational Unit of the Chone Canton. Therefore, it is considered of transcendental importance to Link didactic strategies for teaching mathematics to the use of virtual tools. Design methodologies based on their use to improve the mathematics teaching process (Bezanilla et al., 2019).

In this context, the primary goal is to improve the teaching process of mathematics in topics such as solving division problems. It is hoped that, during the teaching process, virtual tools will be introduced to improve students' mathematics learning. At the same time, it is considered that the incorporation of these tools would allow for meaningful learning on the topics covered. To this end, the research question is formulated: How would the use of Word Wall as a teaching strategy influence the teaching and learning of division among fifth-year students of the Cinco de Mayo Fiscomisional Educational Unit in the Chone Canton?

At the same time, the hypothesis is raised: With the implementation of Word Wall, the teaching-learning process of the division in Middle Elementary School students of the Fiscomisional Educational Unit "Cinco de Mayo" of the Chone Canton is improved. Based on the above, the research approach will be mixed (Qualitative and Quantitative), as well as the level of the same is correlational, the type of research is Causi-experimental, the methodology used will be Inductive-Deductive and Analytical-Synthetic, the data collection techniques will be the survey and knowledge test to the students (Control and experimental group).

Materials and Methods

The research adopted a mixed approach (quantitative and qualitative). The methodology used was inductive, organizing and analyzing the collected information, with the aim of concluding the specific scope of the problem posed to the general.

This method was used to derive general conclusions from the observations and specific data obtained in the research. The inductive method deduces a general law about the nature or behavior of things. Furthermore, the deductive method helped to highlight the current state of the teaching-learning process of division. Furthermore, the deductive method was very effective when the concepts, definitions, formulas, laws, and principles were already well understood by the student, since conclusions were generated from them.

The statistical method allowed for the interpretation of data whose essential character is variability (Jiménez, 2011). This method included stages such as data collection planning, information organization and presentation, descriptive analysis, and statistical inference, which seeks to generalize the results to a broader population based on a sample. The bibliographic method consisted of a systematic search for information from documentary sources to support the research. Furthermore, a correlational research level and the type of experimental research were determined.

At the same time, the data collection methods were the survey, a versatile and accessible tool that allowed researchers to obtain information from a target population (Medina et al., 2023). This research also used the survey to collect quantitative data and obtain a broader picture of the perception and use of the Word Wall. Data collection was carried out through knowledge tests for students. Initially, a demonstration class was held for both the control and experimental groups in a traditional manner, using only the mathematics textbook provided by the Ministry of Education.

In a second phase, only the experimental group was given a class incorporating virtual environment tools such as the use of Word Wall. The middle school population corresponds to 190 students from the "Cinco de Mayo" Fiscomisional Unit in the Chone Canton. The selected sample was 61 fifth-year middle school students from parallel classes A and B, along with two middle school teachers. For the research, two groups were formed: 30 students for the control group (parallel group A) and 31 students for the experimental group (parallel group B).

Analysis and Discussion of Results

Word wall offers several benefits as a virtual math learning environment, including the creation of interactive activities that motivate students and facilitate the understanding of abstract concepts. It also allows for the customization of activities for different levels and learning styles, promoting inclusion and active learning.

Word wall as a virtual learning environment

Currently, there is a wide range of applications that promote the use of innovative methodologies in the classroom and that can also be implemented in pedagogical reinforcement. In the subject of Mathematics, the importance of aligning the design of pedagogical reinforcement with current educational regulations is highlighted to ensure its effectiveness and relevance. In many educational settings, teachers encounter difficulties implementing innovative pedagogical approaches that allow for comprehensive development with quality content that enables the achievement of the required skills (Perlaza et al., 2024).

Mathematics teaching faces significant challenges due to the perceived complexity of mathematics and the traditional textbook- and blackboard-based methodology. With technological advancements and the availability of digital resources such as Word Wall, an opportunity arises to improve understanding and motivation in learning division. Simply using educational software is not enough; it must be appropriately integrated into the educational environment designed by the teacher (Estupiñan et al., 2024).

The use of digital innovations such as Word Wall in education is an example of the use of emerging pedagogies. Designing a teaching guide with the support of the Word Wall digital tool improves the design of student learning assessments. The results obtained indicate that the introduction of digital resources into the teaching-learning process of mathematics is beneficial because it generates motivation, interest, creativity, and participation in children (Flores et al., 2024).

In early childhood education, the development of mathematical skills is the foundation for logical thinking and problem-solving. However, traditional methods and the lack of integration of digital tools limit students' interest and academic performance. The implementation of Wordwall in early childhood mathematics teaching results in a notable improvement in student motivation and engagement. Teachers positively value the tool, noting its effectiveness in creating a more interactive and dynamic learning environment (Collantes et al., 2024).

Word Wall: Features and Functionalities

The continued use of ICT-based experiences seeks to contribute to children's learning based on their interests, taking the initiative of teacher motivation. This is because it overcomes the various difficulties that may arise and demonstrates that the use of technology brings many benefits to those children who explore the different programs. Therefore, it can be said that including programming in students' pedagogical dynamics is of great help in the development of computational thinking skills such as problem-solving, logical data organization, abstraction, and simulation through algorithmic thinking and sequencing (Luselida & Orfali, 2022).

Word Wall is a digital tool that has gained popularity among educators due to its ability to create interactive and engaging activities. With a wide variety of templates, it allows teachers to design games, quizzes, and exercises tailored to different levels and subjects. Templates created by other users can be used, edited, and printed. The interactive action program can also be played on any device—a computer, tablet, mobile phone, or interactive whiteboard—from any web browser. This facilitates personalized learning, making activities more relevant and engaging for students (Palacios, 2022).

The use of the virtual tool Wordwall as a methodological approach to improve the understanding of division emerges as a possible solution to this problem, given that Wordwall allows for the design of interactive, visual, and personalized activities. Students were even able to engage more actively and meaningfully in the learning process; interactive activities can make abstract components more tangible and accessible, while encouraging play and

exploration, helping students develop deeper and more lasting connections with division concepts and improving their ability to apply them in various contexts (Herrera, 2023).

It offers a wealth of pre-existing resources created by other teachers. These resources can be explored, used as originally designed, or adapted by the teacher as appropriate. If the teacher finds an activity on the website that he or she considers not entirely appropriate, there is the option to edit and customize it with his or her own themes, according to the subject or course of interest (Wordwall, 2023).

Benefits of using Word wall

The main function of gamification in mathematics is to make learning more engaging and keep students engaged. This methodology can include challenges, rewards, levels, and competitions, transforming mathematical activities into interactive and fun experiences. For example, online games, apps, or classroom activities can be designed that combine mathematical problems with engaging narratives and game mechanics, allowing students to approach mathematical concepts in a more participatory and practical way (Giler et al., 2023).

Digital competencies are defined as the set of knowledge, skills, and abilities that enable the safe, ethical, and critical use of information society technologies, communication, learning, knowledge, empowerment, and participation. They involve the use of digital systems to obtain, evaluate, store, produce, present, and exchange information, and to communicate and participate in collaborative networks through the Internet (Ministry of Education, 2023).

These tools have become essential in various fields, such as education, work, health, and entertainment. An educator who intends to teach using Information and Communication Technologies (ICT) must have minimal technological knowledge and be a specialist in the subject matter. Teachers are not only required to have a solid grasp of the content they teach, but they must also be familiar with ICT (Palacios, 2022).

The use of Wordwall creates a more dynamic and motivating environment, promoting active participation and student interest during class sessions. Its ability to adapt to different learning styles and skill levels allowed for more personalized teaching, which contributes to strengthening students' confidence and autonomy in solving mathematical problems. Another relevant aspect is the improvement in feedback and academic progress monitoring processes, facilitating more efficient assessments aligned with each student's individual needs (González et al., 2025).

Development of logical thinking in the teaching-learning process

Currently, early childhood education aims to enhance specific affective and cognitive skills. Developing logical-mathematical thinking at an early age will facilitate the development of specific skills and intelligence. It is necessary to appropriately stimulate children to achieve better performance throughout each stage of their lives, strengthening their context critically and reflectively regarding how they view and analyze their daily lives. (Guerrero & Díaz, 2022).

Children grow and develop according to the stimuli and meaningful experiences provided by their environment. Therefore, it is essential that, from early childhood, their ability to solve problems through the use of logic and mathematics be strengthened. This helps ensure that children can naturally comprehend and understand calculus, quantification, propositions, number concepts, correspondence, and other logical-mathematical concepts that are essential to the teaching-learning process (Ludeña et al. 2022).

The importance of this approach lies in the possibility of generating skills for the development of mathematical intelligence and also for the use of logical reasoning, benefiting children and preparing them to understand concepts and establish logic-based relationships in a schematic and technical way. Furthermore, it naturally develops capacities for calculation, quantification, propositions, and hypotheses. Initial stimulation or training is a key factor in the acquisition of these skills, which will allow them to achieve important achievements for personal success. (Rojas, 2021).

Mathematics education is crucial for developing logical mathematical thinking, and its effectiveness depends on several pedagogical factors. These include innovative teaching methods, adaptive teaching resources, rigorous teacher preparation, and the creation of a stimulating learning environment. These elements are crucial for how students assimilate and apply mathematical concepts. An effective pedagogical approach must recognize students' characteristics and encourage critical reasoning and exploration, thereby improving their mathematical skills (Arboleda, 2024).

To contrast the differences that occurred in this process, the data obtained during the initial and final evaluations were used. The mean test was employed, which allowed for the visualization of significant changes, if any. Once the data were tabulated, the results of each group were compared, and the following statistical hypotheses were evaluated:

- H0: There is no significant difference between the application of the Word Wall in the teaching and learning of division in fifth-year Basic students of the Cinco de Mayo Fiscomisional Educational Unit.
- Hi: Yes, there is a significant difference between the application of the Word Wall in the teaching and learning of division in fifth-year students of the Cinco de Mayo Fiscomisional Educational Unit.

Table 1 shows the results of the control and experimental pre-test and post-test groups

Table 1
Control and experimental group results pre-test and post-test

No	Control Group (Parallel A)	Pre-test	Post-test	Experimental Group (Parallel B)	Pre-test	Post-test
1	Cont1	4	6	Exp1	3	4
2	Cont2	4	7	Exp2	4	5
3	Cont3	3	5	Exp3	3	5
4	Cont4	4	7	Exp4	5	6
5	Cont5	3	6	Exp5	3	5
6	Cont6	4	7	Exp6	3	6
7	Cont7	3	7	Exp7	4	5
8	Cont8	2	4	Exp8	2	3
9	Cont9	3	6	Exp9	3	5
10	Cont10	4	6	Exp10	5	7
11	Cont11	4	7	Exp11	4	5
12	Cont12	4	5	Exp12	3	3
13	Account13	3	4	Exp13	3	4
14	Cont14	2	5	Exp14	4	4
15	Cont15	5	6	Exp15	2	3
16	Cont16	3	6	Exp16	3	4
17	Cont17	4	7	Exp17	4	5
18	Cont18	5	6	Exp18	3	3
19	Cont19	2	4	Exp19	3	4
20	Cont20	3	6	Exp20	4	4
21	Cont21	4	7	Exp21	3	6
22	Cont22	3	7	Exp22	4	5
23	Cont23	2	4	Exp23	2	3
24	Cont24	3	6	Exp24	3	5
25	Cont25	4	6	Exp25	5	6
26	Cont26	4	7	Exp26	4	7
27	Cont27	4	5	Exp27	3	3
28	Cont28	3	4	Exp28	3	4
29	Cont29	2	5	Exp29	4	4
30	Cont30	5	6	Exp30	2	3
				Exp31	2	4
	Media	3.38	5.74	Media	3.36	3.83

The data collected during the initial phase of the research, based on the administration of the pretest, showed a mean score of 3.38 for the control group and 3.36 for the experimental group. These results indicate that there was no significant difference between the two groups in terms of their prior knowledge of traditionally taught division.

In the final phase, after the training process, significant differences were observed. The experimental group was taught division using the didactic strategyWord Wall, while the control group continued to receive instruction using traditional methods. As a result, the experimental group achieved a mean of 5.74, in contrast to the mean of 3.83

obtained by the control group. These results reflect a significant difference between the two groups, leading us to accept the alternative hypothesis and reject the null hypothesis.

The analysis of the data obtained through the application of the pretest and posttest confirmed that the use of the Word Wall in teaching division generates a positive impact on the teaching-learning process. A significant improvement was evident in the experimental group compared to the control group, which supports the effectiveness of this tool compared to traditional strategies in teaching mathematics. This answers the research question: How does division influence Word Wall as a teaching tool in the teaching-learning process of division in fifth-year students of Basic General Education of the Cinco de Mayo Fiscomisional Educational Unit, Chone canton?

The results obtained in this research allow us to demonstrate the positive impact of the use of Word Wall as a teaching strategy in the teaching-learning process of division among fifth-year students of Basic General Education. In the diagnostic phase, both the control group and the experimental group presented very similar scores in the pretest, with means of 3.38 and 3.36, respectively. This suggests that both groups possessed a comparable level of prior knowledge regarding division using traditional methods.

However, at the end of the pedagogical intervention, a significant improvement was observed in the performance of the experimental group, which was instructed using the strategy Word Wall group achieved a mean score of 5.74 on the post-test, in contrast to the mean of 3.83 for the control group, which continued to receive classes using traditional methods. This difference suggests that the implemented strategy not only facilitated the understanding of the mathematical content but also motivated students to actively participate in their learning process.

These findings are consistent with previous research highlighting the benefits of using visual and contextual resources in learning mathematics, especially in abstract topics such as division. Word WallBy presenting key terms and procedures in a visual and accessible way, it helped reinforce mathematical vocabulary and understanding of the steps involved in problem solving, thus promoting the development of logical-mathematical thinking.

Furthermore, the active participation of the experimental group in the construction and use of the Word Wall enhanced collaborative learning, allowing students to appropriate the content in a more meaningful way. This aligns with the tenets of the constructivist approach, which maintains that learning is actively and socially constructed through interaction with the environment and others (Meirink et al., 2009).

Therefore, the alternative hypothesis of the research is accepted, which states that the use of Word Wall significantly influences the teaching-learning process of division. The null hypothesis, which suggested no such influence, is rejected based on the empirical results obtained.

In conclusion, the data and analysis developed support the idea that innovating in teaching strategies, incorporating visual tools such as the Word Wall, has a positive impact on students' academic performance, especially in areas such as mathematics, which require high levels of comprehension and abstraction. This raises the need for teachers to integrate active, visual, and participatory strategies to improve the learning of fundamental concepts in basic education (Martín-Blas & Serrano-Fernández, 2009).

Conclusions

The implementation of the teaching strategy Word Wall proved effective in the teaching-learning process of division among fifth-year students of Basic General Education. The post-test results showed a significant improvement in the experimental group compared to the control group, validating its usefulness as a pedagogical tool.

From the analysis of the scores obtained, a significant difference was found between the means of the control group (post-test mean: 3.83) and the experimental group (post-test mean: 5.74). This allows us to accept the alternative hypothesis of the research and reject the null hypothesis, confirming that the Word Wall positively influences the learning of division.

In the diagnostic phase, both the control group and the experimental group presented similar levels of prior knowledge about division (pre-test means of 3.38 and 3.36, respectively), which guarantees that the changes observed at the end of the intervention are due to the strategy applied and not to initial differences between the groups.

The use of the Word Wall allowed students to visually represent the concepts and procedures of division, promoting the retention, understanding, and appropriation of mathematical knowledge, by the principles of meaningful and constructivist learning. Teachers are encouraged to incorporate visual and interactive strategies, such as Word Wall, in the classroom, especially in subjects such as Mathematics, where abstract concepts require visual and contextual support for better assimilation.

References

Arboleda, M. M. (2024). Desarrollo del Pensamiento Lógico-Matemático y su relación con las Prácticas Pedagógicas. *Ciencia Latina Revista Científica Multidisciplinar, 8*(1), 4556-4565.

Bezanilla, M. J., Fernández-Nogueira, D., Poblete, M., & Galindo-Domínguez, H. (2019). Methodologies for teaching-learning critical thinking in higher education: The teacher's view. *Thinking skills and creativity*, *33*, 100584. https://doi.org/10.1016/j.tsc.2019.100584

Collantes-Lucas, M. A., Rogel-Jimenez, C. V., & Cobeña-Coveña, M. C. (2024). Estrategia Didáctica para la Enseñanza de Matemáticas en Educación Inicial II: Integración de Wordwall. *MQRInvestigar, 8*(3), 5340-5362.

Estupiñan-Coox, A. V., Blanco-Zavala, C. A., & Inca-Pilco, G. J. (2024). Aprendizaje interactivo de fracciones utilizando Wordwall: una herramienta lúdica para la comprensión matemática. *MQRInvestigar, 8*(3), 3154-3170.

Flores, F. D. L. S. P., Holguín, A. L. H., Rivera, P. L. G., & Revelo, E. R. (2024). Uso de la herramienta tecnológica Wordwall en la evaluación de aprendizaje. *Dominio de las Ciencias, 10*(3), 1606-1623.

Giler-Meza, C. A., Ayala-Cedeño, K. A., López-Fernández, R., & Mérida-Córdova, E. J. (2023). Analítica del aprendizaje utilizando la gamificación en el desarrollo de las habilidades matemática de los estudiantes de octavo de básica. *MQRInvestigar, 7*(4), 2356-2373.

González-Martínez, J., Rodríguez-Verdezoto, V. K., & Albarrasin-Noble, M. G. (2025). Matemáticas divertidas: El uso de Wordwall como recurso gamificado. *MQRInvestigar, 9*(1), e150-e150.

Guerrero, M. A., & Díaz, R. T. (2022). Actividades lúdicas para el desarrollo del pensamiento lógico matemático en niños de educación inicial II. REFCalE: Revista Electrónica Formación y Calidad Educativa. ISSN 1390-9010, 107-122.

Herrera Placencia, V. A. (2023). El uso de la herramienta virtual Wordwall para la comprensión de las multiplicaciones en los estudiantes de sexto grado de EGB de la Unidad educativa American School (Master's thesis, Universidad Nacional de Educación).

Jiménez, F. (2011). Crecimiento económico: enfoques y modelos.

Ludeña-Carrillo, J. E., & Zambrano-Acosta, J. M. (2022). Guía de actividades lúdicas para el desarrollo del pensamiento lógico-matemático en niños de Educación Inicial. *Revista estudios del desarrollo social: Cuba y América Latina, 10*(3).

Luselida, C. R., & Orfali, G. G. (2022). Pensamiento Computacional a través de Wordwall y Educandy y su Impacto en las Competencias Matemáticas en el Nivel Preescolar.

Martín-Blas, T., & Serrano-Fernández, A. (2009). The role of new technologies in the learning process: Moodle as a teaching tool in Physics. *Computers & Education*, *52*(1), 35-44. https://doi.org/10.1016/j.compedu.2008.06.005

Martínez, D. A. V. (2021). Competencias matemáticas: una mirada desde las estrategias de enseñanza en educación a distancia. Góndola, Enseñanza y Aprendizaje de las Ciencias: Góndola, *Ens Aprend Cienc, 16*(2), 382-398.

Medina, M., Rojas, R., & Bustamante, W. (2023). *Metodología de la investigación: Técnicas e instrumentos de investigación*. Instituto Universitario de Innovación Ciencia y Tecnología Inudi Perú.

Meirink, J. A., Meijer, P. C., Verloop, N., & Bergen, T. C. (2009). Understanding teacher learning in secondary education: The relations of teacher activities to changed beliefs about teaching and learning. *Teaching and teacher education*, *25*(1), 89-100. https://doi.org/10.1016/j.tate.2008.07.003

Mejía, J.A.L. (2022). Estrategia didáctica sustentada en el uso óptimo de las Tecnologías de Información y Comunicación para el aprendizaje de Matemática en el nivel bachillerato (Master's thesis, Jipijapa-Unesum).

Ministerio de Educación (2023). Marco Curricular competencial de aprendizajes. https://educacion.gob.ec/wp-content/uploads/downloads/2023/11/marco-curricular-competencial-de-aprendizajes.pdf

Noro, J. (2019). Obsolescencia y obsolescencia programada: de los artefactos a la existencia humana, la vida y las relaciones.

Ordoñez Palacios, L. G., & Medina Chicaiza, R. P. (2022). Wordwall: una experiencia de aprendizaje para el estudiante de Educación básica. Revista de Investigación, 46(108).

Perlaza, M. M., Vega, J. X. P., Delgado, R. A. M. C., & Calle, V. A. L. (2024). Wordwall como herramienta de apoyo en el refuerzo pedagógico de Ciencias Naturales. *Polo Del Conocimiento*, *9*(3), 1118-1136.

Rojas, S. Z. C., Sánchez, V. C., Terán, M. S. Q., & Benítez, M. D. C. P. (2021). Estrategias didácticas para el desarrollo del pensamiento lógico matemático en niños de educación inicial.

Sandoval, C. H. (2020). La educación en tiempo del Covid-19 herramientas TIC: El nuevo rol Docente en el fortalecimiento del proceso enseñanza aprendizaje de las prácticas educativa innovadoras. Revista Tecnológica-Educativa Docentes 2.0, 9(2), 24-31.

Wordwall (2023). Página oficial de Wordwall. https://wordwall.net/es/features