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Virtual environments for learning mathematics in Alternative Basic Education, Huánuco, 2023

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Abstract

The objective of the article was to determine the influence of digital environments for the learning of mathematics in the students of CEBA Leoncio Prado de Huánuco, 2022. A hypothetical deductive methodology was applied with a pre-experimental design, while the instrument consisted of 30 items. The technique used was the survey, the instruments were two questionnaires validated through the judgment of three experts and their reliability was verified with the statistical method (Cronbach's Alpha). The sample consisted of 80 students and a non-probabilistic intentional sampling was carried out, and the data were analyzed with SPSS software. Descriptive and inferential statistics were used with a hypothesis test and correlation for the two variables that are virtual environments and learning, with the result that there is a relationship between both variables. The data obtained were examined to analyze each variable with descriptive and inferential statistics, finding that, of the 80 respondents, 100.0% are located in the efficient level, 0.0% in the regular level and 0.0% in the deficient level for the dependent variable Learning. Of the 80 respondents, 100.0% were in the efficient level, 0.0% in the regular level and 0.0% mentioned that the professional commitment is deficient; likewise, the value of the correlation coefficient is 0.699, which establishes that there is a moderate positive correlation between both variables.

Keywords: Virtual learning environments, professional commitment, virtual education, learning.

I. Introduction

Globally, virtual environments in the educational field became extremely important in the pandemic of covid-19, leading to a change in learning in both teachers and students, who initially showed resistance to change, in this sense (Sánchez et al., 2020) specified the need to adapt virtual environments to the needs of the student. Quezada and Altagracia (2021) refer that virtual learning environments are a challenge for an educational quality and constitute a transformation in the development of learning of competences in students who have needs, as essential factors for improving education.

In November 2022, Lima hosted the VII Ministerial Summit on Government and Digital Transformation of the Americas given by the Network of Electronic Government of Latin America and the Caribbean (Red GEALC), the Inter-American Development Bank (IDB) and the Organization of American States (OAS), where 27 countries participated and 11 prioritized thematic blocks where it was emphasized about the digital transformation as an opportunity for citizens, through which human inclusion and governance is promoted to strengthen, as the productive and social reactivation. Tool as an impact for development and cybersecurity in the approach of humanity to benefit from advances in efficient and participatory needs. Digital transformation drives and promotes development and democratic governance.

The commitment as government policy for all Peruvians by 2030 is to narrow the digital divide and ensure digital citizenship for all in Peru. The digital project consolidated and served 4,000 million digital platforms and 1,000 digital orientation services. Peru climbed in digitization 12 positions of the United Nations in National 15 positions of open data and second place in citizen participation in Latin America and the Caribbean. According to the government secretary, cell phones play an important role in the life of the person because it has several applications to perform various actions and has options that people perform daily such as shopping, sales, business, transactions, communication and daily interactivities. In Peru post pandemic, the centers of education in alternative basic education (CEBA), post pandemic students are already integrated into the digital world but there are digital gaps for the development in the use of virtual environments in teachers and students can use the digital environments that are essential for autonomous learning, interaction and communication and connectivity that should be prioritized for equitable development in alternative basic education.

Ccorahua (2021) argued that opting for a virtual environment for student learning has shortcomings in cognitive processing capacity, implying that students are at the beginning and process levels of learning in such environments.

Oyola (2021) stated that high school students have difficulties in the use of virtual environments for learning, i.e., they do not have a good command of digital tools and internet connection for their educational activity in the area of mathematics, and there are shortcomings in the strategies of the virtual environment in their learning process.

In the CEBA GUE Leoncio Prado, due to the pandemic of Covid 19, there is a primary need arising from the digital divide for virtual education in the form of face-to-face care of the advanced cycle. While it is true that the pandemic made known the need for empowerment with technologies and the post-pandemic of covid transformed education into digital, the students of the advanced cycle do not have an empowerment profile on the use of virtual environments for their work

in the learning process. For this reason, there are difficulties when performing or using any platform, which is why the lack of knowledge in the management and implementation hinders the work for the development of activities in the area of mathematics, as well as digital educational materials and their diversity of applications, giving inconveniences for the development of the process of improving the quality of learning, autonomy, personal and social formation, construction of learning, interaction and communication, collaborative work, as well as the use of support from other tools which means a preparation for life in society.

In this sense, virtual environments allow the inclusion and opportunity to adapt to the learning development process, which requires the predisposition in the virtual work of teachers and students in a synchronous and asynchronous way through virtual environments in the learning of the mathematics area of EBA. The following problem is posed: How do virtual environments influence learning in mathematics in students of CEBA Leoncio Prado de Huánuco, 2022? The objective was to determine the influence of digital environments for learning mathematics in students of CEBA Leoncio Prado de Huánuco, 2022.

II. Theoretical background

At the international level, Pozo et al. (2022), whose study was to determine the relationship between virtual environments for learning mathematics in UANAM students, reports that the sample consisted of 744 students, with a quantitative approach methodology, correlational with a cross-sectional cut. In conclusion, virtual environments reflect a significant incidence on mathematics learning.

In the same context, Manilla et al. (2022) carried out a study to establish the relationship between virtual environments and mathematics learning, with a quantitative, correlational and cross-sectional approach, using a sample of 530 students from a high school in Finland. The study concluded that virtual environments are indispensable to offer students the learning of mathematics, providing them with a better education with the technological and quality demands of today's society.

For Zempoalteca et al. (2022), the purpose of the study was to determine the relationship between virtual environments and mathematics learning in public school students, comprising a sample of 334; the design was correlational, with a cross-sectional and quantitative approach. In conclusion, there is a positive relationship between the variables that compose it.

Franco et al. (2022), who investigated virtual environments with mathematics learning, conducted a study to determine the measurement between variables and their various causes, using a

quantitative approach, and for this purpose they applied a questionnaire to 484 students in 9 municipalities or regions, collecting data through questionnaires. As a result, the most predominant factor was virtual environments, with 70.5% of the respondents. The conclusion is that the virtual environments for learning mathematics are the most important factor in the learning process.

Likewise, Criado (2022) had the purpose of knowing the virtual environments and mathematics learning, being the type of quantitative research, with a working sample of 369 students (initial, primary, secondary), where a likert scale questionnaire was applied. The results determined that the virtual environments achieved and the learning of mathematics obtained an average score, concluding that teachers recognize and accept the value of their work.

Mago (2021) determined that virtual environments are related to mathematics learning in the Open University for adults, conducted research on a sample of 200 students, applied a questionnaire of 20 items. The research of basic type, quantitative approach, descriptive level to determine quality learning or improvement for achievement of skills and concluded that the teaching and learning in the virtual environment are of quality and important for students.

At the national level, Sanabria (2022) applied the Quizizz in virtual learning in mathematical competencies, being of a quantitative type, applied, with a quasi-experimental design. The sample consisted of 40 students of the 2nd year of high school, the technique was the questionnaire and statistical analysis of data, concluding that there is a relationship between both variables.

Arauco (2022) aimed to determine the incidence of learning in mathematical competencies developed in virtual environments in Alternative Basic Education Ate-2021. With a non-experimental, explanatory design, the sample consisted of 53 students. The technique used was the survey and an evaluation, as an instrument, the questionnaire, and a written test. The results showed that 94.3% had an average level of autonomous learning and 77.4% had an expected achievement in mathematical competencies. In conclusion, there is a significant influence of learning in virtual environments.

Ruiz (2022) refers in his research that due to the COVID-19 pandemic, there were changes in the educational environment, the objective was to interpret through virtual environments the learning of mathematics, with a qualitative - hermeneutic approach, with interviews through zoom. The conclusions were the acquisition of new knowledge, useful in life and society, problem solving was considered: understanding, design, strategy and procedure, related to knowledge; learning skills as skills to situations, participation, resources, attitudes, commitment and discipline generate significant learning with virtual environments.

According to Salazar et al. (2021), student-centered educational virtual environments facilitate and improve the teaching and learning process by creating new online environments for learning either in time or space. The use of virtual environments is urgent becoming a common need for institutions, however its implementation and use is a great challenge and complex for teaching and learning, and there are gaps which should emphasize the change in teaching - learning with activities to significant results. It allows remote work at any time and place, it can be viewed from any device, has personal access, and allows for multimedia elements, links, web.

Dávila (2021), in his research refers that in the Bagua Public High School of Artistic Education there are difficulties in the use of technology in learning for both teachers and students, which affects the continuity of their studies. The general objective was to analyze a didactic model with the use of virtual environments to improve teaching and learning among students. The sample consisted of 25 students to whom a questionnaire was applied for teaching and learning processes in virtual environments. The results were a deficient (8) and regular (11) level, which indicated the realization of a didactic model with virtual environments based on constructivist theory and virtual learning, validated by expert judgment.

Theoretical basis concerning virtual environments

The virtual environments are motivations for interactive activities, the presentation has templates with animation designs, audio, colors, playful activities, etc., for learning. Idea Flip also helps to make sticky notes or cards for brainstorming, online groups (Salazar et al. 2021 p.37).

The Stormboard tool creates and develops collaborative online brainstorming, sparks research, lowers anxiety among students, and develops competencies. Another is Prezi Video which has template presentations for video creation where your image and content go together when you record or broadcast live that keeps you connected.

Quezada and Altagracia (2021) refer that virtual learning environments are a challenge to have an educational quality, but by not having as an instrument for a learning quality both in its process, methodology and pedagogical innovation. The virtual environments constituted a form of transformation in the development of learning in the competencies of students who have needs as a main factor to make significant learning in the transformation of Education, since the ISO standard was to improve in the institutions to innovate.

Virtual environments are one of the bases of improvement for life learning, becoming a necessity in all educational institutions and teachers in terms of their use and implementation of learning. to perform synchronous and asynchronous learning, as a reality that leads to modern devices, but at the same time when there is still a lack of necessary conditions in alternative basic education to empower

themselves with educational environments, which today are being a change in teaching and learning. This leads to reflect on having a quality of learning in students as builders of learning for life and their social development for new challenges in society. With virtual environments, quality learning is developed and its optimal management for the development of competencies.

In this context; in the ABE curricular program, the virtual environments generated by ICT with responsibility and ethics, bases that the student in the activities he develops, has to select information, evaluate, modify, create digital materials, communicate, adapt, participate with virtual environments for their learning according to their interests and needs, combining capabilities to customize as Manage information select, organize, modify individually in varied virtual environments with digital formats or processes for their activity with relevance and ethics. Complement with other spaces in a sociocultural way with values and links taking into account their usefulness, overcoming achievements for their life development (Alternative Basic Education Program, 2019, p.30).

Theoretical basis for learning mathematics

Learning is an action of processing and organizing; the learner elaborates new knowledge, starting from a review, transformation and modification of what was previously learned. Constructivism maintains that learning is constructed by means of the schemas that the student possesses with what is new in relation to the environment in which he lives or surrounds him. Constructivism has its sources in epistemology and in theories such as those of Vygotsky, Ausubel and Piaget (Bedregal, 2021).

Student learning has a constructivist approach, where learning spaces are encouraged according to cognitive needs with activation of previous and innovative ideas, with critical thinking, meaningful learning, within the principles of interaction and experience, produces new meaningful knowledge, responds to applied skills, organization of time and control, information with learning in various forms of evolutionary experiences of what he knows and what he should know. In addition, solutions to problems through learning styles, evaluation to the transfer of knowledge in the construction of learning, where he reflects at every moment of what he learns with meta cognitive strategies of progress in competencies, which has the predisposition, motivation, and execution in its potential development, which assumes protagonism of the learning throughout his life (Salazar et at., 2021 p.19-26).

Within the framework of lifelong learning, ABE ensures the development of competencies, integrates new forms of pedagogical practice in the learning process. There is planning of the teaching and learning process, formative evaluation that regulates the development of the

competencies foreseen. Curricular planning in ABE considers the National Basic Education Curriculum (CNEB), regional curriculum and CEBA's PEI, ABE Curricular Program.

Bedregal (2021) affirms that activities or exercises are practices designed and planned with the purpose that students achieve goals. These vary according to needs, while techniques can be planned according to learning styles to achieve optimal results.

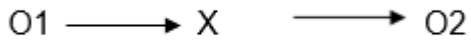
Referring to assessment, this should be student-centered as a form of instrument that diagnoses student learning (p.58). One of the dimensions referring to competencies is the set of socio-affective behaviors and cognitive, sensory, psychological, and motor skills that adequately perform an activity, task, or performance (Bedregal, 2021).

Methodology

Research is of the applied type and is oriented to solve the problematic situations of a social group, for example, in the field of education. Ñaupas et al. (2020) "point out that it is called applied research because it is based on the findings of basic or fundamental research in the field of natural and social sciences and seeks to solve the problems of a community group" (p.44).

The research design is pre-experimental since one of the study variables (independent) is manipulated to modify the result of the other variable (dependent); it also focuses on studying a single group (measuring a before and after) and its level of control is minimal. Bernal (2019) states that the experimental design is characterized by executing a set of procedures to manipulate the independent variable and measure the effect on the dependent variable, hoping to demonstrate significant changes.

Figure 1. Research design



X = Variable independiente

O1= Observation before the application of the instrument.

O2= Observation after application of the instrument.

Variables and operationalization

Independent Variable: Virtual environments

Quezada and Altagracia (2021) "refer that virtual learning environments is a challenge to have an educational quality, but not having as an instrument for a quality learning process, methodology and pedagogical innovation" (p, 55).

Dependent Variable: Mathematics learning.

Solorzano (2020), "refers that this should be student-centered as a way to develop competencies and apply instruments that diagnose student learning" (p.58).

Operacionalización

The variable Virtual environments is operationalized in three dimensions.

The variable Mathematics learning is operationalized in three dimensions.

Population

It is made up of 100 students of Alternative Basic Education of GUE Leoncio Prado. According to Hernández et al. (2016), the population is the set of people who coincide with certain characteristics, such as gender, community, political grouping, religious congregation, etc.

The sample

The sample is composed of 80 students. Ñaupas et al. (2021) defines the sample as a segment of the population that meets the characteristics of the whole, allowing the generalization of the results.

Sampling

Sampling is non-probabilistic, census and convenience sampling. Convenience sampling is characterized by the fact that the researcher chooses the study units arbitrarily according to the ease or accessibility of the group (Hernández-González, 2021).

Inclusion criteria: Alternative Basic Education students of GUE Leoncio Prado, of both sexes, enrolled in the 2022 period.

Exclusion criteria: students who do not attend classes on a regular basis, students who have not yet regularized their enrollment.

The technique

For this study, the technique used is the test, which is characterized as an evaluation of a physical or mental activity that has established a normal standard based on the knowledge of the correct answers. This technique is used in research to determine the aptitude, capacity or knowledge (..) of the participants in comparison with a population group (U.S. Department of Health and Human Services, 2020)

Instrument

The instrument with respect to virtual environments and mathematics learning allows gathering information from students on both variables. The instrument is defined by Hernández. Mendoza (2021), "as a resource used by the researcher with the purpose of collecting

information on the variables of the study" (p, 66). The virtual environments are constituted by twelve questions.

Data analysis methods

The data collected regarding virtual environments and mathematics learning were organized in a Microsoft Excel 2016 spreadsheet, recording the results of the pre-test and post-test and then importing them into SPSS 26. Prior to the statistical analysis in SPSS, the Shapiro-Wilk normality test was performed, which is used for samples of less than 50 participants. Once the normality of the data was determined at both times, the Willcoxon test was applied for hypothesis testing. On the other hand, the data analysis used to answer the research questions and test the proposed hypothesis was carried out by measuring the variables virtual environments and mathematics learning through the descriptive and/or inferential statistical method (Ñaupas et al., 2018).

III. RESULTS

Based on the objectives of the study, it presents the results of the descriptive statistics.

Table 1 Frequencies and percentages of the virtual learning environments variable and its dimensions.

	Virtual learning environments		D1. Infrastructure		D2. Curriculum		D3. Learning planning	
Level	f	%	F	%	f	%	f	%
Deficient	0	0,0	0	0,0	0	0,0	0	0,0
Regular	0	0,0	6	11,5	9	17,3	4	7,7
Efficient	52	100,0	46	88,5	43	82,7	48	92,3
Total	52	100,0	52	100,0	52	100,0	52	100,0

	D4. Learning		D5. Communication		D6. Evaluation resources	
Level	F	%	f	%	f	%
Defficient	F	%	f	0,0	0	0,0
Regular	0	0,0	0	15,4	7	13,5
Efficient	13	25,0	8	84,6	45	86,5
Total	39	75,0	44	100,0	52	100,0

Source: SPSS, 2022.

Regarding virtual learning environments, of the 52 participating teachers who were surveyed, 100.0% are in the efficient level, 0.0% in the regular

level and 0.0% in the deficient level. Regarding the dimensions, it was analyzed that for the infrastructure dimension, 88.5% indicated that the infrastructure is efficient for making use of virtual environments, 11.5% mentioned that it is regular and 0.0% said that the infrastructure is deficient. For the curriculum dimension, 82.7% perceived that the curriculum is efficient, 17.3% indicated that it is regular and 0.0% said that it is deficient.

Regarding the learning process planning dimension, it was observed that 92.3 % indicated that it is efficient, however 7.7 % perceived it as regular and 0.0 % indicated that it is deficient, likewise for the learning resources dimension, 75.0 % indicated that they have efficient learning resources, 25.0 % said that it is regular, and 0.0 % mentioned that it is deficient. Regarding the communication dimension, 84.6% indicated that communication is efficient and 15.4% revealed that communication is regular, and 0.0% mentioned that communication is deficient.

Finally, for the evaluation dimension, 86.5 % were rated as efficient, 13.5 % revealed that the evaluation is efficient and 0.0 % perceived that the evaluation is deficient. This means that the highest percentage of participants perceived an efficient level, demonstrating that the adequate use of virtual learning environments is an important tool in the work of teachers, so it can be said that most of them make adequate use of these resources.

Table 2 Frequencies and percentages of the mathematics learning variable and its dimensions.

	Mathematics learning		D1. Conceptual learning		D2. Procedural learning		D3. Attitudinal learning	
Nivel	f	%	F	%	f	%	f	%
Deficient	0	0,0	0	0,0	0	0,0	0	0,0
Regular	0	0,0	13	25,0	5	9,6	7	13,5
Eficient	52	100,0	39	75,0	47	90,4	45	86,5
Total	52	100,0	52	100,0	52	100,0	52	100,0

Source: SPSS, 2022.

With respect to learning, in the opinion of the 52 respondents, 100.0% are at the efficient level, 0.0% are regular and 0.0% are deficient. 0 % is regular and 0.0 % is deficient, for the second dimension 90.4 % is efficient, 9.6 % is regular and 0.0 % is deficient, finally referring to the third dimension 86.5 % is efficient, 13.5 % is regular and 0.0 % is deficient. This means that the teachers recognized that the virtual learning environments are moderately related to professional commitment and its three dimensions.

Inferential analysis

Testing the general hypothesisHi. Existe relación entre los entornos virtuales de aprendizaje y el aprendizaje de matemática en la GUE Leoncio Prado.

Ho. There is no relationship between virtual learning environments and mathematics learning at GUE Leoncio Prado.

Table 3 Correlation degree between virtual learning environments and mathematics learning.

			Virtual learning environments	Mathematics learning
Rho of Spearman	Virtual learning environments	Correlation coefficient	1,000	,699**
		Sig. (bilateral)	.	,000
		N	52	52
	Aprendizaje de matemáticas	Coeficiente de correlación	,699**	1,000
		Sig. (bilateral)	,000	.
		N	52	52

Fuente: SPSS, 2022.

The results of the Spearman's nonparametric test indicate a high significance value = 0.000, accepting the general alternative hypothesis as true, indicating an ambivariate correlation =0.699, which is the value of the correlation coefficient, establishing a moderate positive correlation.

Specific hypothesis 1

Hi. There is a relationship between virtual learning environments and conceptual learning of mathematics at GUE Leoncio Prado.

Ho. There is no relationship between virtual learning environments and conceptual learning of mathematics at GUE Leoncio Prado.

Table 4 Degree of correlation between virtual learning environments and conceptual learning

			Entornos virtuales de aprendizaje	Compromiso afectivo
Rho de Spearman	Entornos virtuales de aprendizaje	Coeficiente de correlación	1,000	,440**
		Sig. (bilateral)	.	,001
		N	52	52
	Compromiso afectivo	Coeficiente de correlación	,440**	1,000
		Sig. (bilateral)	,001	.
		N	52	52

Source: SPSS, 2022.

Table 4 shows that the results of Spearman's nonparametric test showed that the bilateral significance value is 0.001, therefore, the specific hypothesis 1 was accepted, i.e., there is a significant relationship between the independent variables virtual learning environments and the conceptual learning dimension. Likewise, the value of the correlation coefficient was found to be =0.440, which establishes that there is a moderate positive correlation.

Specific hypothesis 2

Hi. There is a relationship between virtual learning environments and procedural learning in mathematics at GUE Leoncio Prado.

Ho. There is no relationship between virtual learning environments and procedural learning in mathematics at GUE Leoncio Prado.

Table 5 Degree of correlation between virtual learning environments and procedural learning.

			Virtual learning environments	Procedural learning
Rho of Spearman	Virtual learning environments	Correlation coefficient	1,000	,415**
		Sig. (bilateral)	.	,002
		N	52	52

Procedural learning	Correlation coefficient	,415**	1,000
	Sig. (bilateral)	,002	.
	N	52	52

Source: SPSS, 2022.

Table 5 shows that the results of Spearman's non-parametric test show that the bilateral significance value is 0.002, therefore, the alternative specific hypothesis 2 was accepted, i.e., that there is a significant relationship between the virtual learning environments variable and procedural learning. Likewise, it can be seen that the value of the correlation coefficient is =0.415, which establishes the existence of a moderate positive correlation.

Specific hypothesis 3

Hi. There is a relationship between virtual learning environments and attitudinal learning in mathematics at GUE Leoncio Prado.

Ho. There is no relationship between virtual learning environments and attitudinal learning in mathematics at GUE Leoncio Prado.

Table 6 Degree of correlation between virtual learning environments and attitudinal learning.

			Virtual learning environments	Attitudinal learning
Rho of Spearman	Virtual learning environments	Correlation coefficient	1,000	,738**
		Sig. (bilateral)	.	,000
		N	52	52
	Attitudinal learning	Correlation coefficient	,738**	1,000
		Sig. (bilateral)	,000	.
		N	52	52

Source: SPSS, 2022.

Table 6 shows that the results of Spearman's nonparametric test demonstrate that the bilateral significance value is 0.000, therefore, the

specific alternative hypothesis was accepted. It can also be seen that the value of the correlation coefficient is =0.738, which establishes that there is a moderate positive correlation.

DISCUSSION

The present study assumed as an objective to determine the influence of digital environments for learning in mathematics in the students of CEBA Leoncio Prado de Huánuco, 2022, for which the general hypothesis was raised. There is a moderate to revealing relationship between variables, according to the results it is observed that the effects of Spearman's nonparametric test, that the bilateral significance value is 0. 000. Therefore, the hypothesis is acceptable, finding a p value of 0.000 < 0.05 with a Spearman's Rho coefficient of 0.699, which indicates that there is a moderate positive correlation between the variables.

Regarding the results obtained, it was possible to verify coincidences with the research of Pozo, et al. (2022) whose study was to establish links between virtual environments for mathematics learning in UANAM students. Also with Manilla, et al. (2022) whose study was to establish the relationship between virtual environments and mathematics learning. Likewise, Zempoalteca et al. (2022) conducted a study with the purpose of determining the link between virtual environments and mathematics learning in public school students. Also with Franco et al. (2022) who investigated virtual environments with mathematics learning. Also with Criado (2022) whose purpose was to know the virtual environments and mathematics learning. Mago (2021) argued that virtual environments are related to mathematics learning. Also with Sanabria (2022), he commented on the application of Quizizz in virtual learning in mathematical competencies, and with Salazar et al. (2021), the student-centered virtual educational environments.

CONCLUSIONS

First:

In relation to the general objective, the conclusive results determine the relationship between virtual learning environments and student learning, obtaining a p-value =0.001, therefore the alternative hypothesis is accepted and the null hypothesis was rejected.

Second:

Regarding the first objective, it has been determined that there is an indispensable relationship, since the results obtained in the correlation test indicate that there is a significant relationship between virtual environments and conceptual learning, where a p value = 0.001 was

found, therefore, the alternative hypothesis is accepted and the null hypothesis is rejected.

Third:

Taking into account the second specific hypothesis, it was determined that there is a significant relationship between virtual environments and procedural learning, obtaining a p-value of 0.002, accepting the specific hypothesis and rejecting the null hypothesis.

Fourth:

Based on objective 3, it was concluded that there is a significant relationship between virtual environments and attitudinal learning, finding a p= 0.000, therefore, the specific hypothesis is accepted and the null hypothesis is rejected.

RECOMMENDATIONS

First:

It is recommended that the educational institution that was part of this study, consult and analyze this research as a background to make decisions regarding the use and management of the EVAs that have an impact on the teaching commitment, since these tools play an important role in education and can be managed in an effective way.

Second:

It is suggested that the directors of the educational institution under study, which is part of this research, invest a budget to improve and maintain the virtual environments they have, as well as to look for an expert who can keep them enabled and be of daily use by teachers.

Third:

It is suggested to the educational community of the network to which the school under study belongs, to implement training workshops for teachers based on virtual environments so that there is an adequate use and management of these spaces and learning can be observed.

Fourth:

It is suggested to the teachers who were part of our research, to be active participants during the use and management of the learning environments and to transfer them in the most practical way to the students, showing empathy and tolerance so that learning is satisfactory and meaningful.

Fifth:

It is recommended that those who wish to investigate this situation carry out an experimental work with the purpose of examining and

taking actions to improve the attention of the students and to achieve changes in education.

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