

Virtual platforms in meaningful learning in students of private universities in Lima during the Covid 19 pandemic

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Summary

In the educational context, the health emergency caused by the Covid-19 pandemic led to changes in teaching, technology and administration, one of the most common pedagogical adjustments being the use of virtual platforms for teaching, mainly in university education. That is why the objective of this study is to determine the influence of the virtual platform Classroom and its dimensions (informative, practical, communicative and tutorial and evaluative) in the meaningful learning of students from private universities in Lima, Peru. The research presents a quantitative, empirical-analytical and positivist approach, of a basic type and non-experimental design. The sample consisted of 100 students from different careers at private universities in Lima-Peru, to whom two questionnaires were applied on a Likert scale, validated by expert judgment, with a Cronbach's Alpha of 0.910 and applied through the questionnaire form. Google. According to the results obtained, it is concluded that virtual platforms and their dimensions have a positive impact on meaningful learning in students of private universities in Lima, Peru. The results obtained present an updated and reliable base that can be used to evaluate the incidence of virtual platforms in student learning, in addition, the implications are discussed and recommendations for further studies and practices are provided.

Keywords: educational platforms, virtual education, ICT, motivation, learning.

INTRODUCTION

The context of the health emergency caused by the Covid-19 pandemic posed a challenge in the form of teaching at all levels of education, since teachers and students had no other option than to move from a face-to-face education model to a virtual one. a situation for which most countries were not prepared, so the challenge of unexpectedly training teachers on the use of educational platforms and development of educational skills was assumed, while a restructuring of strategies, activities, resources and tools for the educational process. In this way, as indicated by Crispin, Ortiz and Flores (2021), countries like Peru and many others had to make pedagogical, technological and administrative

adjustments in their learning environments to move towards a b-learning environment.

It is in this sense that León et al. (2021) indicates that in the Panamanian context, universities were forced to migrate towards the use of virtual educational platforms, with Moodle being the most widely used, followed by Educativa and Google Classroom; However, due to factors such as the time of interaction with the platform, form of evaluation, educational quality, intuitiveness, and interaction, the platforms best rated by teachers were Canvas, Schoology, E-ducative, and Chamilo, while those with the lowest rating were Google Classroom and Microsoft Teams.

Proof of this reality is that, in 2020, there was an increase of 34% in the number of scientific

articles based on the analysis of educational platforms in Peru compared to the previous year, which shows a clear increase in scientific interest in analyzing the impact of educational platforms in this region. (Llamocha, 2021)

Likewise, in the private universities in Lima, Peru under study, virtual platforms (Classroom and other Google applications) were already being used, but due to the new educational provisions due to the pandemic, they had to adapt to improve the use of teaching tools. digital platforms and implement a remote teaching system that considers student demands, for which training was carried out for teachers, administrative and technical support staff, students and parents, in order to achieve the continuity of the educational service and that students achieve quality learning.

According to what was previously mentioned, the following general research problem was formulated: How do virtual platforms influence meaningful learning in students of a private University in Lima, Peru?, and the following specific problems: How do the dimensions Informative, practical, communicative and tutorial and evaluative of virtual platforms influence meaningful learning in students of a Private Universities in Lima, Peru?

The study will allow to know the theories and dimensions of the variables and that the digital platforms are used efficiently in the educational institution to improve the teaching-learning process, the instruments elaborated can be used in future investigations of educational institutions that present the same problem, finally the results obtained will improve the effectiveness of the use of virtual platforms in the acquisition and improvement of knowledge and skills of students.

The general objective of the study is to determine the influence of virtual platforms on meaningful learning in students of private universities in Lima, Peru, and the specific objectives are to determine the influence of the informative, practical, communicative, tutorial and evaluative dimensions of the virtual platforms. virtual platforms in

meaningful learning in students of a private university in Lima, Peru.

The general research hypothesis is that virtual platforms affect meaningful learning in students of a private university in Lima, Peru and the specific hypotheses are that the informative, practical, communicative, tutorial and evaluative dimensions of virtual platforms in meaningful learning affect meaningful learning in students of private universities in Lima, Peru.

THEORETICAL FRAMEWORK

Regarding the international background to be considered for the purposes of this study, Cabanillas, Veríssimo and Luengo (2020) approached a quantitative study, of an exploratory type in 16 students and 3 teachers of the subject of mathematics of the Polytechnic Institute of Portalegre, where the results showed that the students have an adequate attitude and knowledge of the PAE - IPP virtual platform because they frequently use technological devices, however, the students indicate a preference for learning mathematics accompanied by a teacher; while the teachers point out that the little base in the subject of the students, accompanied by the use of ICT and virtual platforms makes it difficult for the students to motivate; while the students consider that the virtual platform and ICT motivate the learning and teaching of mathematics; Finally, the students showed that this virtual platform does not have enough tools for communication, opting for the use of WhatsApp and other social networks.

Likewise, Yangali, Arboleda and Arispe (2021) designed a quantitative study, of the applicative, descriptive type, hypothetical-deductive method and experimental design on a sample of 96 students from the Santa Sofía educational institution in the municipality of Dosquebradas in Colombia, the results showed that the educational platform Moodle enhances the learning of mathematics in fifth grade students, since it allows, in most cases, the optimization of their academic performance with respect to the traditional teaching methodology; Likewise, it was found that the numerical-variational, geometric and random aspects are strengthened, such as the

way of representing, reading and interpreting the information, the way of analysis to represent the numerical data, as well as analyzing, exposing and recognizing random situations. .

On the other hand, Méndez, Galindo, Mora, Gimeno and Marín (2019) carried out a qualitative study of an application type and experimental design, in a group of 85 students of the General Linguistics II course at the University of Alicante. The results based on meaningful learning and the use of digital tools showed that, regarding the ability to synthesize, 70.3% of the students declared that they had improved in this aspect, 59.4% of the students perceived an improvement in their academic expression, the 74.2% of the students stated that they had developed their ability to quote and paraphrase, 53.1% stated that they had perceived improvements in their understanding of technical texts, finally 90.3% of the students surveyed stated that they had learned better with digital tools than with the most popular methodologies. traditional.

Finally, Navarro, Cejas, Mendoza, Aldaz and Venegas (2021) established a study with a quantitative approach and a non-probabilistic sample type in a group of 500 university students from the Ecuadorian province of Chimborazo, with the objective of determining the reality of the platforms education in higher education during the COVID-19 pandemic, as well as describe the impact of these from the point of view of academic achievement. The results revealed that students have a positive attitude towards the use of educational platforms, likewise it was found that educational platforms almost always facilitate academic performance through virtual activities.

Regarding the national background, the results obtained by Blanco and Blanco (2021), who carried out a quantitative, exploratory descriptive study, with a non-experimental cross-sectional design in a public institution in Lima, Peru, where 130 students participated, reflected that meaningful learning through the use of information and communication technologies was moderately low, since teachers did not use attractive

resources and materials that encourage motivation to learn in students, highlighting the importance of implementing activities and making correct use of the different tools of educational digital platforms to achieve meaningful learning in students.

Hidalgo, Villalba, Arias, Berrios and Cano (2021), applied the Inverted Classroom strategy on a virtual platform (Moodle) in the Applied Research refresher course, with 46 Communication Sciences graduates from the National University as participants. de Piura, his study of mixed methodology and pre-experimental design, sought to evaluate the effects of this strategy on the development of investigative skills. The results confirmed that the average grade of the students is higher and has significant differences after having applied the Flipped Classroom model, managing to acquire the skills and learning objectives set, that is, the flipped classroom strategy in the virtual platform. , is very effective and that the integration of virtual platforms into educational processes must respond to the learning needs of students.

Likewise, Guzzetti de Marecos (2020) carried out a qualitative and descriptive investigation, to describe the advantages and difficulties in the implementation of virtual platforms in the teaching-learning process, in this study scientific articles of investigations carried out in Peru, Colombia, Paraguay, Argentina and Spain, of which it is noted that virtual platforms are a valid didactic tool for education, favoring autonomy, communication, innovation and motivation of students, but there are difficulties such as connectivity, costs, necessary resources and administration, for which it is required to train the teacher and student in the use of the tools of digital platforms.

Regarding the theoretical bases of meaningful learning, it is based on the discovery made by the student, a new concept, content, knowledge, based on the interests, experiences, motivation and use of the student's reflective thinking, considering previous experiences, the presence of a teacher mediator or counselor, the students in the process of self-realization and the interaction to design an evaluative judgment;

In this way, learning will be significant only if the student can attribute the possibility of utility to the new knowledge acquired by relating it to previous knowledge. (Rivera, 2004)

Throughout significant learning, the student constantly contrasts his previous experiences and knowledge with the new knowledge, which turns the student into an integrating student, since his experiences are not merely cognitive, but psychomotor and values in relation to others. (Ausubel, 1977)

According to Bernúdez and López (2016), the role of meaningful learning in the discovery of knowledge is that by intentionally relating the material with significant potential to the established and relevant ideas of its cognitive structure; This is where the interest in learning is generated, relating to the discovery of knowledge, so the student with the presentation of an idea, can generate new mental structures that produce growth in their cognitive development in a systematic and progressive way. (Tamayo et al., 2018)

Area (2005) points out that, for this reason, it is essential to understand that, in meaningful learning, the student is not exclusively a passive receiver, but rather, on the contrary, he is an active actor who has to make use of the meanings previously established to understand the meanings of educational materials, that is, as Gros (2004) mentions, the student stands as the main person responsible for their learning. Finally, Calzadilla (2002) indicates that in order for significant learning to be generated, two elementary conditions must arise, the first of which is that the student must be willing to learn, he must have a real interest in acquiring knowledge, and the second is that this learning, according to Novak (2002), must be systematic and progressive.

Virtual platforms are defined as a means of communication used in the teaching-learning process, characterized by synchronous communication (videoconference, chat, shared blackboard), asynchronous communication (debate forums, email, bulletin board) and the communicative interaction between the same students and

teacher-student. (Hernández, Carro and Martínez; 2019)

Educational platforms are autonomous or standardized development tools, to effect interaction between multiple participants in the learning process (teachers, students, tutors, supervisors, administrators, etc.). These platforms offer students a controlled and closed environment in which educational institutions can incorporate elements related to their functions, such as educational content modules, participation forums, feedback tools, communication media, etc., trying to offer a atmosphere as familiar and uniform as possible. (Coates, James and Baldwin, 2005)

The use of virtual platforms can strengthen the use of various tools and resources that were previously not easily accessible to students such as multimedia, digital materials, cooperative and collaborative spaces for joint learning for distance students and, on the other hand, facilitates the possibility of interaction between students-students and teachers-students, with which new opportunities and learning spaces are generated in a virtual educational model. (Sanchez, 2009)

The implementation of virtual educational platforms in educational institutions must be accompanied by training for both teachers and students to ensure the proper use of the different digital tools that the platform has, in order to provide quality education. (Rodriguez, 2018)

Virtual platforms have four pedagogical dimensions: the informative dimension defined as the set of materials and resources that display information, for example, texts, animations, videos, links, presentations, etc. the practical dimension, referring to the set of tasks, activities or actions planned by the teacher and carried out by the students, individually or in groups; the communicative dimension understood as the set of resources and activities that have as their objective, the social interaction between the teacher and the students; Finally, we have the tutorial and evaluative dimension that refers to the teaching functions related to the evaluations, which show detailed statistics of the

qualifications, which will allow a timely feedback. (Area and Adell, 2009)

METHOD

The research was of a quantitative, empirical-analytical, positivist or rationalist approach, that is, it is based on the measurement of variables in a specific context or situation whose data are statistically analyzed which allow conclusions to be drawn, the type of research was basic, characterized by validate or verify the scientific theories formulated or analyzed previously as well as provide new scientific knowledge, the level of research was descriptive, correlational - causal, the method applied was hypothetical-deductive and the research design was non-experimental, cross-sectional, correlational - causal, since the phenomenon was observed in its natural state without manipulation of the variables, in addition the data was collected in a single moment. (Hernández and Mendoza, 2018; Valderrama, 2015)

The technique used for data collection was the survey, and the instruments were two questionnaires on a Likert scale used to measure the appreciation of the virtual learning platform Google Classroom in the students and their significant learning, respectively, which were applied on a non-

probabilistic sample of 100 students from different careers of private universities located in Lima-Peru, these instruments were validated by expert judgment, likewise their reliability was determined with the Cronbach's Alpha test which resulted in 0.910 for both questionnaires, then it was delivered to students through a Google form. Subsequently, the data collected was analyzed using descriptive and inferential statistics, through the statistical software SPSS to verify the hypotheses raised and determine the degree of relationship of the variables under study. The instruments that were applied here mediate aspects such as: facility for the development of activities, facility for the exchange of opinions, group work, among others; and the motivational technique used, practical application, association with reality, favoring self-learning, etc.

RESULTS

General Hypothesis Test

H₀ . Virtual platforms do not affect meaningful learning in students from private universities in Lima, Peru .

H₁ : Virtual platforms affect significant learning in students of private universities in Lima, Peru

Table 1

Parametric test of virtual platforms in Meaningful Learning

		Confidence interval at 95%				
Parameters		Estimate	Dev. Error	Wald	gls.I.G.	Glue. inf. Glue. sup.
Umbral	[ASIG1 = 1.00]	-4,701	.603	60,8411	.000	-5.883 -3,520
	[ASIG1 = 2.00]	-1,600	.348	21,1431	.000	-2.282 -.918
Ubicación	[PV1 = 1.00]	-3.931	.757	26,9761	.000	-5,415 -2,448
	[PV1 = 2.00]	-3.024	.564	28.7551	.000	-4.129 -1.919
	[PV1=3.00]	0 ^a	.	.	0 . .	.

Table 1 shows the results of the parametric test, where the Wald score for virtual platforms is of $28.755 > 4$ (cut-off point) and with a value of $p: 0.000 < \alpha: 0.01$ and the Wald scores for the significant learning variable is $21.143 > 4$ and $p: 0.000 < \alpha: 0.01$, which allow reject the null hypothesis and accept the alternative hypothesis, that is, the

virtual platforms positively affect meaningful learning in students of private universities in Lima, Peru.

Specific Hypothesis Test 01

Ho. The informative dimension of virtual platforms does not affect significant learning in students of private universities in Lima, Peru .

H1: The informative dimension of virtual platforms affects significant learning in

students of private universities in Lima, Peru .

Table 2

Parametric test of the informative dimension of virtual platforms in Meaningful Learning

		Confidence interval at 95%					
Parameter		Estimate	Dev. Error	Wald	gl	S.I.G. Glue. inf.	Glue. sup.
Umbral	[ASIG1 = 1.00]	-4,052	.584	48,127	1	.000 -5.197	-2,907
	[ASIG1 = 2.00]	-1,630	.444	13,504	1	.000 -2,500	-.761
Ubicación	[INF1 = 1]	-2,841	.660	18,546	1	.000 -4.134	-1,548
	[INF1 = 2]	-1,726	.531	10.561	1	.001 -2.766	-.685
	[INF1=3]	0 ^a	.	.	0	.	.

Table 2 shows the results of the parametric test, where the Wald score for the informative dimension of virtual platforms is of 10.561 > 4 (cut-off point) and with a value of p: 0.000 < α : 0.01 and the Wald scores for the significant learning variable is 13.504 > 4 and p: 0.000 < α : 0.01, which allow reject the null hypothesis and accept the alternative hypothesis, that is, the informative dimension of virtual platforms

positively affects meaningful learning in students of private universities in Lima, Peru.

Specific Hypothesis Test 02

Ho. The practical dimension of virtual platforms does not affect significant learning in students of private universities in Lima, Peru.

H1: The practical dimension of virtual platforms affects significant learning in students of private universities in Lima, Peru.

Table 3

practical dimension of virtual platforms in meaningful learning

		Confidence interval at 95%					
Parameter		Estimate	Dev. Error	Wald	gl	S.I.G. lim. info	lim. His p.
Threshold	[ASIG1 = 1.00]	-4,323	.574	56,798	one	.000 -5,447	-3,199
	[ASIG1 = 2.00]	-1,556	.369	17,808	one	.000 -2,279	-.834
Location	[PX1=1]	-3,525	.699	25,442	one	.000 -4.895	-2.155
	[PX1=2]	-2.170	.506	18.384	1	.000 -3.162	-1.178
	[PX1=3]	0 ^a	.	.	0	.	.

Table 3 shows the results of the parametric test, where the Wald score for the praxis dimension of virtual platforms is of 18.384 > 4 (cut-off point) and with a value of p: 0.000 < α : 0.01 and the Wald scores for the significant learning variable is 17.808 > 4 and p: 0.000 < α : 0.01, which allow reject the null hypothesis and accept the alternative hypothesis, that is, the practical dimension of virtual platforms has a positive impact on

meaningful learning in students of private universities in Lima, Peru.

Specific Hypothesis Test 03

Ho. The communicative dimension of virtual platforms does not affect significant learning in students of private universities in Lima, Peru .

H1: The communicative dimension of virtual platforms affects significant learning in students of private universities in Lima, Peru .

Table 4

Parametric test of the communicative dimension of virtual platforms in Meaningful Learning

		Confidence interval at 95%					
Parameter		Estimate	Dev. Error	Wald	gl	S.I.G. lim. info	lim. His p.

Threshold[ASIG1 = 1.00]	-3,216	.453	50,450	one.000	-4,103	-2,328
[ASIG1 = 2.00]	-.773	.251	9,498	one.002	-1,264	-.281
Location [COM1=1]	-1,994	.841	5,619	one.018	-3,643	-.3. 4. 5
[COM1=2]	-1.994	.519	14.7581	.000	-3.012	-.977
[COM1=3]	0 ^a	.	.	0	.	.

Table 4 shows the results of the parametric test, where the Wald score for the communicative dimension of virtual platforms is of $14.758 > 4$ (cut-off point) and with a value of $p: 0.000 < \alpha: 0.01$ and the Wald scores for the significant learning variable is $9.498 > 4$ and $p: 0.000 < \alpha: 0.01$, which allow reject the null hypothesis and accept the alternative hypothesis, that is, the communicative dimension of virtual platforms positively affect significant learning

Table 5 :

Parametric test for the tutorial and evaluative dimension of virtual platforms in Meaningful Learning

Parameter	Estimate	Dev. Error	Wald	gl	Confidence interval at 95%	
					S.I.G.lim. info	lim. His p.
Threshold[ASIG1 = 1.00]	-4,386	.602	53,024	one.000	-5,566	-3,205
[ASIG1 = 2.00]	-1,220	.291	17,596	one.000	-1,790	-.650
Location [TUEV1=1]	-5,502	1,301	17.8861	.000	-8.052	-2.952
[TUEV1=2]	-2.803	.547	26.2831	.000	-3.874	-1.731
[TUEV1=3]	0 ^a	.	.	0	.	.

Table 5 shows the results of the parametric test, where the Wald score for the tutorial and evaluative dimension of the virtual platforms is of $26.283 > 4$ (cut-off point) and with a value of $p: 0.000 < \alpha: 0.01$ and the Wald scores for the significant learning variable is $17.596 > 4$ and $p: 0.000 < \alpha: 0.01$, which allow reject the null hypothesis and accept the alternative hypothesis, that is, the tutorial and evaluative dimension of virtual platforms have a positive impact on meaningful learning in students of private universities in Lima, Peru.

DISCUSSIONS

It was shown that virtual platforms affect students' meaningful learning, which is related to the research by Yangali et al. (2020) who demonstrated that the Moodle educational platform enhances the learning of mathematics in fifth grade students, since it

in students of private universities in Lima, Peru.

Specific Hypothesis Test 0 4

Ho. The tutorial and evaluative dimension of virtual platforms does not affect significant learning in students of private universities in Lima, Peru .

H1: The tutorial and evaluative dimension of virtual platforms affects significant learning in students of private universities in Lima, Peru .

allows them to optimize their academic performance by strengthening the numerical-variational, geometric and random aspects; thus demonstrating that the use of virtual platforms has an impact on the significant learning of the student, however, since motivation is a fundamental aspect for meaningful learning according to Calzadilla (2002), this result would not be related to the teacher's perception in the Cabanillas study et al. (2020), who point out that the use of virtual educational platforms hinders motivation in students, however, it would coincide with the perception of students, who consider that they motivate learning.

It was found that the informative dimension of virtual platforms has a positive impact on the significant learning of students, which is related to what was determined by Blanco MA and Blanco ME (2021) who indicated

that significant learning through the use of virtual platforms information and communication technologies, such as virtual platforms, was moderately low due to the fact that teachers did not use attractive resources and materials that encourage students' motivation to learn; which demonstrates a clear relationship between the informative of virtual platforms and meaningful learning, because for the reality of this study, by not having resources and attractive materials for students such as animations, videos, presentations and among other resources, it was not possible to satisfactorily develop meaningful learning, which proves the incidence of information in this learning.

practical dimension of virtual platforms has a positive impact on the significant learning of students, this result is consistent with the findings of Méndez et al. (2019) who, through the application of a pilot program for the application of a virtual platform for the teaching and learning of the subject of General Linguistics II, the students declared to have perceived improvements in their synthesis capacity, in their academic expression, in the ability to quote and paraphrase, and in their understanding of technical texts. Additionally, this conclusion is supported by the results of Navarro et al. (2021) who showed that educational platforms almost always facilitate academic performance through the application of virtual activities; Therefore, these antecedents support the incidence of the practical dimension of virtual platforms in meaningful learning.

It was found that the communicative dimension of virtual platforms has a positive impact on the significant learning of students, this conclusion is related to what was pointed out by Cabanillas et al. (2020) who showed that the mathematics students of the Polytechnic Institute of Portalegre were dissatisfied with the communicative aspect of their virtual educational platform PAE-IPP, and therefore preferred to solve this deficiency using social network applications such as WhatsApp; which would demonstrate the importance of having a virtual platform robust enough to meet the educational

communicative needs of teachers and students, with the aim of achieving meaningful learning in the latter.

Finally, the incidence of the tutorial and evaluative dimension of the virtual platforms in the significant learning of the students was verified, which agrees with the study carried out by León et al. (2021) who mention that the applications with the lowest rating by Panamanian university teachers were Google Classroom and Microsoft Teams, unlike Canvas, Schoology, E-ducative and Chamilo, because the latter allowed them to have a better teaching methodology. evaluation, while they had a better detail of the qualification obtained by the students, thus verifying the relevance of the tutorial and evaluative dimension of the virtual educational platforms for the significant learning of the students.

CONCLUSIONS

According to the results obtained after the statistical tests carried out, where the Wald score for the virtual platforms is $28.755 > 4$ (cut-off point) and with a value of $p: 0.000 < \alpha: 0.01$ and the Wald scores for the significant learning variable is $21.143 > 4$ and $p: 0.000 < \alpha: 0.01$, allowing us to conclude that virtual platforms have a positive impact on significant learning in students of private universities in Lima, Peru, thus denoting the importance of carry out research to analyze the different virtual platforms used at different educational levels, identify the advantages and difficulties of their implementation and see the effects they have, both on meaningful learning and academic performance.

In the case of the dimensions of the virtual platforms, the statistical results for the informative dimension, the practical dimension, the communicative dimension and the tutorial and evaluative dimension ($10.561 > 4$; $18.384 > 4$; $14.758 > 4$ and $26.283 > 4$) respectively and the variable significant learning ($13,504 > 4$; $17,808 > 4$, $9,498 > 4$ and $17,596 > 4$), allow us to conclude that all of them positively affect significant learning in students of private universities in Lima, Peru, the dimensions of this variable have a close relationship with the different digital

tools available on the platforms and the use that is given to them, which is why the use and management training is essential in remote education, so that teachers can adapt their pedagogical strategies to a virtual environment and so that students can effectively take advantage of all the materials, activities, interactions, etc. in favor of achieving the skills, abilities and skills previously raised in the developed course.

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