The Relationship Between the Virtual Platform and the Academic Performance of Students of the Systems Engineering Course at the National University of Callao in the Period 2022

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Abstract

The present investigation had the objective of determining the relationship that exists between the virtual platform and academic performance of the students of the Professional School of Systems Engineering at the National University of Callao in the period 2022.

The methodology was of the applied type, of a quantitative, descriptive, correlational approach, of a non-experimental design, of a cross section. The sample consisted of 27 students from the Information Systems course, in the 2022-B Academic Semester of the UNAC Professional School of Systems Engineering, applying a questionnaire to measure the virtual platform variable, duly validated and with a high reliability.

The results showed that 70.4% of students surveyed from the School of Systems Engineering rated the virtual platform at a good level, 25.9% at an excellent level and 3.7% at a regular level, in addition, 96.3% of surveyed students have obtained a medium level of academic performance and 3.7% a low level of performance. Likewise, the findings obtained through Spearman's Rho Coefficient p-value<0.05=0.033 and rho=0.511 confirm the study hypothesis. Therefore, it is concluded with 95% confidence that there is a significant relationship between the virtual platform and the academic performance of the students of the Professional School of Systems Engineering at the National University of Callao in the period 2022.

Keywords: *Virtual platform, academic performance.*

INTRODUCTION

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The virtual platform has become a solution that achieved the continuity of education at all levels, particularly at the university level and that became a new learning experience, since, as the United Nations Educational Organization points out, (UNESCO, 2020), Covid-19 had an unfavorable impact on university students around the world, as it caused the suspension of face-to-face teaching, so alternatives were sought to continue the educational process under conditions of restrictions, isolation social, among other drawbacks, and the possibility of implementing the best alternatives was found to avoid a negative outcome, in the long term, in the training of future professionals.

It is a reality that most universities were not prepared to face such a sudden change caused by the COVID-19 pandemic. It was also a challenge to motivate students and teachers to face another modality of teaching and learning; This is stated in the multiple publications on the subject: neither one nor the other was prepared. Likewise, facilities for online learning were not guaranteed in all institutions (Vidal, 2021). Virtual platforms have gained very significant space in higher education institutions, as a knowledge transfer tool, which facilitates the acquisition, assimilation and construction of knowledge (Barrera & Guapi, 2018).

In Latin America and the Caribbean there are approximately 25 million tertiary education students affected by the pandemic. An average of 45% of homes in the region have a fixed Internet connection, while in rural areas this coverage is lower. Therefore, from the first days of the pandemic, universities around the world took rapid initiatives to guarantee the continuity of students' learning and ensure their well-being (IESALC, 2021).

In Peru, in 2020, and as a consequence of the health emergency, higher education suffered several impacts related to the provision of the service, as well as the dropout and enrollment of students. And, although there is still little evidence regarding the experiences of students in this atypical situation, it is known, for example, that families and students presented complaints related to the clarity of the education received in virtual or non-face-to-face mode during in 2020, a situation that led Minedu to announce greater surveillance over the education provided (Rojas, 2021).

Peru has been one of the countries hardest hit by COVID-19, with one of the highest mortality rates in the world per 100,000 inhabitants. Since the state of health emergency was declared on March 14, the population has been confined until October 1. This fact pushed the Ministry of Education of Peru (MINEDU) to decree the closure of in-person courses and force universities to provide their training virtually. This paradigm shift in teaching has forced institutions to look for references and guides in the process of adapting the learning methodological framework (Mendigutxia, 2020).

At the National University of Callao, it is a public institution of higher education in the Callao region, in Peru, with more than 50 years of history, the University is made up of eleven faculties. Its educational field is oriented towards engineering, business sciences and health sciences. Today it trains more than 12,800 students. Problems with connection or lack of experience in digital platforms on the part of teachers and students have been the main obstacles encountered in this process of adaptation to distance education. Therefore, improvised mentoring from students to teachers and the search for creative solutions have been essential to overcome these difficulties. Thus discovering other perspectives and ways of doing things in this new learning framework.

International studies such as that of Higuera and Rivera (2021) in Mexico, developed in 15 higher level institutions, 1,200 teachers and 700 students, showed that during the years 2020-2021 higher education was taught remotely, with Google being the most used platform. classroom, the main means of communication Zoom and WhatsApp, it was confirmed that 80% of the content of the programs was fulfilled, likewise that 90% consider that academic performance is subjective and that it is necessary to develop digital skills, making it evident that Access to technology is an obstacle to achieving

learning. For his part, Ferrer (2021) in Paraguay points out that, despite the sudden change in the modality of classes from in-person to virtual, no significant changes were observed in academic performance in general, but there is a marked difference in the level of participation and dedication to virtual classes. Castillo (2020) in Ecuador, verified that virtual platforms did impact the academic performance of students. Along these lines, Rodríguez and Gravini (2019) in Colombia, their results show that 95% of students identify the use of resources technical and technological devices for leisure and communication in a precarious manner and in most cases with inappropriate uses. Regarding academic performance, the results show that 92% of the students improved their knowledge, analysis of perspectives, systemic and reflective thinking. Thus, Granados (2019) in Costa Rica analyzed the use of the virtual classroom and academic performance, observing a statistically significant correlation between the two.

In the case of studies at the national level, Malpartida (2020) demonstrates with statistical evidence that the Moodle platform has a significant influence on academic performance, therefore, it is essential to complement face-to-face classes with virtual learning environments, due to its influence. positive in the students, contributing to their quantitative achievements in the various subjects. For its part, Chaca (2020) in Huancayo, verified the relationship between the use of the virtual platform and academic performance in students at the Universidad Peruana Los Andes. Torres (2019) in Lima, verified the effects of using the virtual learning platform in improving the academic performance of students. Salvatierra (2019) applied the Moodle platform and analyzed its influence on academic performance at the San Martín de Porres University, concluding that the student's academic performance is positively affected by the application of the Moodle platform. Jihuallanca (2018), in his study, showed that the Moodle platform allows efficient learning to be designed under the constructivist approach, and the use of virtual classrooms improves the academic performance of students.

Virtual platform

According to Cáceres (2021), the virtual platform is the classroom that the Covid-19 pandemic has forced to abandon, and the guarantee of the continuity of the higher education system. Virtual platforms are spaces that provide broad possibilities, incorporate diverse solutions, allow the integration of content, integrate evaluation systems and tools for communication and carrying out group activities. They are, without a doubt, the ideal context for the development of digital education and its implementation is an unstoppable process.

The virtual platform responds to the needs and purposes defined by the people and institutions that have designed it. In this sense, the virtual platform is the result of the institutional environment from which it takes life and is nourished. In this way, the hierarchical relationships implicit in face-to-face communication also occur in the relationships mediated by the virtual platform. That is, both the hierarchical structure of the virtual platform and its institutional nature and use contribute to the exercise of the authority conferred on teachers (Bautista, 2007). According to Díaz (2009), a virtual platform is a computer environment in which we find many tools grouped and optimized for teaching purposes. Its function is to allow the creation and management of complete courses for the Internet without requiring in-depth programming knowledge.

Probably the two most controversial aspects of the platforms are their diversity and their update process. Its diversity, because there are substantial differences between different platforms and standardization is still a distant concept, which makes it difficult to acquire consistent skills in its use and application. Its updating process, because the need to improve the software and the difficulties that can arise the greater the dependence on its teaching action is almost a constant.

As indicated by Area and Adell (2009), in virtual learning platforms or teaching-learning environments we can identify four pedagogical dimensions of great importance:

Informational dimension: This dimension refers to the "set of resources, materials or elements that present diverse information or content for autonomous study by students. Usability dimension. This dimension refers to the "set of actions, tasks or activities that students have to carry out in the virtual classroom planned by the teacher to facilitate learning experiences." Communicative dimension: This dimension refers to the "set of resources and actions of social interaction between students and the teacher. This communication occurs through telematic tools such as forums, chats, internal messaging, email, videoconference or audioconference. Tutorial and evaluative dimension. This dimension refers to "the teaching functions or role that the teacher must perform within the framework of a virtual course." The role played by the distance tutor with respect to the success of a virtual course is of great importance.

Academic performance

Heredia and Cannon (2017) indicate that many times the terms academic performance, achievement, academic success are used interchangeably to indicate the same phenomenon, namely, the extent to which an individual has appropriated content specified by the objectives and is able to demonstrate it in some type of test. To evaluate students' performance in relation to planned objectives, objective tests using a criterion-referenced interpretation are the best procedure. For his part, Martínez (2007) defines academic performance as the product that the student gives in educational institutions and that is usually expressed through grades or grades.

The institutional factor is related to everything that surrounds the university, and can be divided into large areas: infrastructure, means for teaching and means for learning. The teaching staff is described by their education, experience, job satisfaction, development of teaching skills, training, etc. The directive leadership aspect, the curricular aspect among others (Heredia and Cannon, 2017).

For the evaluation of academic performance, there are tests that have the purpose of allowing us to know if the student has mastered the objectives and provide data to improve teaching. Goal-related tests are direct measures of the relative performance of goals. Hence, the process of carrying out the evaluation is closely related to academic performance.

This research has a scientific and social justification, because the results will allow the university institution to support and guide its policies aimed at students and teachers, to contribute to the fulfillment of its mission that will influence the improvement of the academic performance of the students. students and the quality indicators of the university and that can be replicated in other similar institutions at the national level. The methodological justification is based on the fact that within the framework of the study, instruments were validated to measure each of the study variables.

The pedagogical justification is expressed in that the research work allowed us to have a vision and know the problems that the National University of Callao is going through, in particular the Professional School of Industrial Engineering of the Faculty of Industrial and Systems Engineering, with respect to to virtual education and in the context of the pandemic and the academic performance of the student, results that help to substantiate and propose management actions and policies that achieve institutional quality and that will benefit to improve the comprehensive training of students and the community in general.

Therefore, this article aims to determine the relationship that exists between the virtual platform and academic performance of students of the Professional School of Systems Engineering at the National University of Callao in the period 2022.

MATERIALS AND METHODS

Research type and design

The type of study used was the quantitative approach, applied, descriptive correlational, non-experimental design, cross-sectional, with a sample of 98 students. The survey technique and a questionnaire instrument were used, which was applied virtually in the context of the health emergency, using the Google Drive tool, as well as the Minutes of Notes. The deductive hypothetical was used as the research method.

Population and sample

The sample was made up of 27 students from the Information Systems course, in the 2022-B Academic Semester of the UNAC Professional School of Systems Engineering.

Techniques and instruments for collecting information

In the development of the Research, the survey technique and documentary analysis were used and as instruments a questionnaire to measure virtual education and a Data Sheet for academic performance.

Data analysis and processing

For this study, SPSS 26 Statistical Software was used for the analysis of both descriptive and inferential data. Descriptive statistics were used and Spearman's Rho Coefficient was applied to demonstrate the hypotheses.

RESULTS

Table 1 Virtual Platform

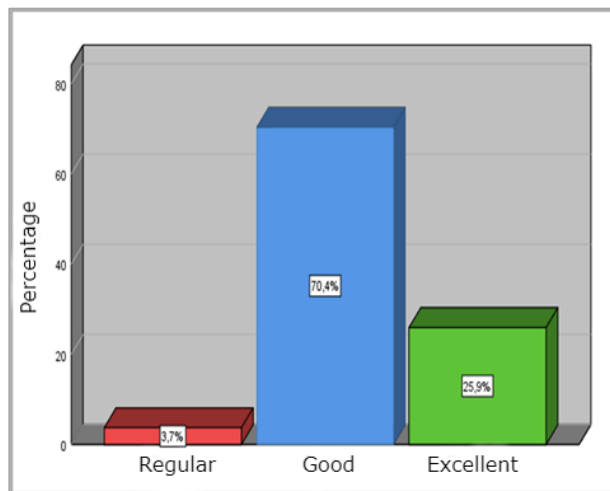|	Frequency	Percentage
Regular	1	3,7
Good	19	70,4
Excellent	7	25,9
Total	27	100,0

Figure 1

Table 1 and Figure 1 show that 70.4% of students surveyed from the School of Systems Engineering rated the virtual platform at a good level, 25.9% at an excellent level, and 3.7% at a regular level.

Table 2 Dimensions of the virtual platform

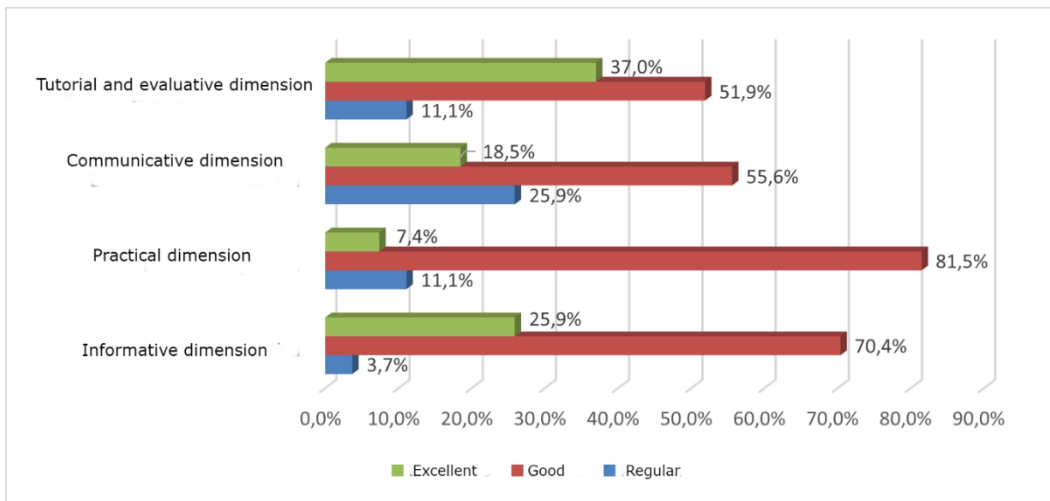|	Regular		Good		Excellent		Total	
	N	%	N	%	N	%	N	%
Virtual Platform	1	3.7	19	70.4	7	25.9	27	100
Informative dimension	1	3.7	19	70.4	7	25.9	27	100
Practical dimension	3	11.1	22	81.5	2	7.4	27	100
Communicative dimension	7	25.9	15	55.6	5	18.5	27	100
Tutorial and evaluative dimension	3	11.1	14	51.9	10	37	27	100

Figure 2

Regarding the dimensions of the virtual platform, table 2 and figure 2 show that 70.4% of students believe that the informative dimension of the virtual platform has a good level, 25.9% an excellent level and 3.7% a regular level. In the practical dimension, 81.5% of students report that they have a good level, 11.1% a regular level and 7.4% an excellent level. In the communicative dimension, 55.6% of students think it has a good level, 25.9% a regular level and 18.5% an excellent level. In the tutorial dimension, 51.9% of students surveyed consider it to be of a good level, 37% an excellent level and 11.1% a regular level.

Table 3 Academic performance

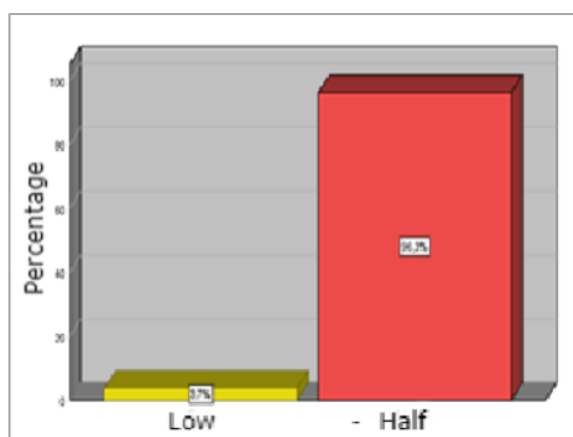|	Frequency	Percentage
Low	1	3,7
Half	26	96,3
Total	27	100,0

Figure 3

Table 3 and Figure 3 show that 96.3% of students surveyed have obtained a medium level of academic performance and 3.7% a low level of performance.

Table 4 Correlation between virtual platform and academic performance

			Academic performance
Spearman's Rho	Virtual platform	Correlation coefficient	,511
		Sig. (bilateral)	,033
		N	27

The statistics carried out showed that there is a medium positive Spearman's Rho Correlation Coefficient, that is, 0.511 and the bilateral significance of 0.033, this has to be less than 0.05, in this case the null hypothesis is rejected and the general hypothesis is accepted : There is a significant relationship between the virtual platform and the academic performance of the students of the Professional School of Systems Engineering at the National University of Callao in the period 2022.

DISCUSSION

The results obtained through Spearman's Rho Correlation Coefficient showed that there is a medium, significant positive relationship between the virtual platform and the academic performance of the students of the Professional School of Systems Engineering at the National University of Callao in the period 2022.

Contrasting the results with other similar studies, coincidences were found with the study by Castillo (2020) in Ecuador, who demonstrated that there is a correlation between the virtual platform and the academic performance of the students of the Mario Cobo Barona educational unit in the city of Ambato. Likewise, Granados (2019) in Costa Rica, in his study "Relationship between the use of the virtual classroom and academic performance in students", observed a statistically significant correlation.

In Peru, they coincided with Malpartida (2020) who, at the Faculty of Agrarian Sciences of the National University of Huancavelica, demonstrated that the application of the Moodle platform and academic performance has a positive correlation, therefore, it is essential to complement the face-to-face classes with virtual learning environments, due to their positive influence on students, contributing to their quantitative achievements in various subjects. In addition, Chaca (2020) in Huancayo, determined the relationship that exists between the use of the virtual platform and academic performance in students, where regular and low levels obtained academically by students are evident, being an aspect that should be worked on more. emphasis to reverse those results.

For his part, Torres (2019) in Lima, verified the effects of the use of the virtual learning platform in improving the academic performance of students, showing that there is a significant difference between the academic performance of the students of the school's networks II of Information Technologies, before and after applying the virtual platform. Just as Salvatierra (2019), at the USMP Law School, concludes that the student's academic performance is positively affected by the application of the Moodle platform. And finally, Jihuallanca (2018), a high school student from the Las Mercedes – Juliaca School Unit, determined that the use of virtual classrooms influences the academic performance of students.

CONCLUSIONS

It is concluded based on the statistical evidence (rho= 0.511, p=0.033<0.05), that there is a significant relationship between the virtual platform and the academic performance of the students of the Professional School of Systems Engineering at the National University of Callao in the period 2022.

Furthermore, the findings show that the virtual platform has a positive impact on the academic performance of students, where the majority of studies surveyed from the School of Systems Engineering rated the virtual platform at a good level, and 96.3% of Students obtained a medium level of academic performance.

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