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Implementation of Curricular Educational Videos Created by the Teacher as a Complement to Face-to-Face Classes to Improve the Academic Performance of Students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo, 2024

Luis Alberto Acosta Sánchez[1]

Abstract

This research aims to implement educational videos created by the instructor as a complementary tool in face-to-face classes within the Faculty of Engineering and Architecture at the Universidad Católica de Trujillo. The focus is on applied science courses, which require teaching methods beyond traditional lectures. The research is applied, with a quasi-experimental design and a quantitative approach. It seeks to address the general question of how the use of educational videos can improve students' academic performance during an academic semester. The sample includes all engineering students enrolled in courses such as Water Supply, Fluid Mechanics, Thermodynamics, Dynamics, and General Hydrology. The study compares students' grades before and after the implementation of educational videos. Additionally, an anonymous survey was conducted to gather students' perceptions regarding the usefulness of the videos in their teaching-learning process. For exploratory data analysis, SPSS software and Excel were used, and a comparative analysis of grades before and after the use of educational videos was performed. The results confirm that the use of curriculum-aligned educational videos improves students' academic performance, enhances understanding of complex concepts, boosts students' motivation to study, and fosters critical thinking in problem-solving. The research also includes appendices, such as the survey and the consistency matrix, which support the data collection process. Overall, this study aims to innovate the teaching-learning process by integrating curriculum-based educational videos as a complement to face-to-face classes, addressing the current needs of students.

Keywords: *Curriculum-Based Educational Video, Academic Performance, Quasi-Experimental.*

Introduction

Throughout the world, university education was always characterized by being face-to-face and classes are developed through conferences, keynote presentations, classroom debates and practical activities. The use of educational videos is occasional and limited to complementary resources on platforms such as YouTube and learning management systems such as Moodle or Blackboard.

During and after the pandemic, COVID-19 forced a massive transition to distance learning. Virtual platforms such as Zoom, Google Meet, Microsoft Teams, among others, were adopted, and the use of audiovisual resources, especially educational videos, increased. After the pandemic, many universities opted for hybrid models, i.e. face-to-face and virtual classes at the same time, recognizing the effectiveness of videos to reinforce content, personalize learning and improve student academic performance.

[1] Universidad Católica de Trujillo, Perú, Email: luisacosta40@hotmail.com

In Latin America, before the pandemic, most Latin American universities depended on face-to-face education, but technological infrastructure was limited, especially in rural areas. Educational videos were used sporadically and, in many cases, students did not have access to technological resources to use outside the classroom.

The pandemic exposed the digital divide, especially affecting low-income students. Universities adopted virtual platforms and teachers resorted to video production to explain key concepts. Subsequently, some institutions have adopted hybrid models, combining face-to-face classes with online activities, where educational videos became an essential tool to reinforce the learning of university students.

In Peru before the pandemic, Peruvian university education focused on face-to-face teaching, with limited audiovisual resources. Teachers used videos in certain subjects, but they were not an integral part of the teaching-learning process, during the pandemic Peruvian universities used videoconferencing platforms and increased the use of educational videos to explain various topics. Connectivity and the digital divide were significant challenges, especially in rural areas. In the post-pandemic era, some universities opted for hybrid models, where educational videos continue to play an important role in personalizing learning and improving academic performance

Therefore, we can affirm that, in Peru, educational videos are a complementary resource, but not essential. Their impact is limited, since they are used sporadically and are not integrated into the curricula, however, today educational videos have become a key tool for the continuity of distance education because they facilitate the understanding of content, self-learning and schedule flexibility, improving the autonomy of students.

Nowadays, educational videos are now part of hybrid learning models that allow the personalization of teaching, reinforce complex topics and promote student autonomy, evidencing improvements in academic performance, especially when used strategically.

In Trujillo and especially at the Catholic University of Trujillo, classes are held in person with some virtual classes with students who are from the Province, but at the main headquarters it is totally face-to-face and on weekends they are held in a hybrid way since it is aimed at students who work and who are pursuing university studies.

In the Faculty of Engineering and Architecture, face-to-face classes are conference-type using acrylic blackboard and markers, in addition to using computers in certain subjects where information or use of specific software is required.

Certain applied science subjects such as thermodynamics, dynamics, water supply and sewerage, fluid mechanics and hydrology that are taught in the different engineering disciplines are carried out through face-to-face classes and sometimes lectures alone are not enough due to the complexity and diversity of problems that arise and the extensiveness of these disciplines, so the use of educational videos is chosen as a complement to the teaching-learning process. but not those of YouTube or any other platform, but those made by the teacher of the course where they are in accordance with the corresponding syllables and summaries so that the student after his face-to-face class has as a complement the reinforcement of the class and can assimilate them repetitively at home and obtain the learning achievement that is required to be achieved.

These disciplines are taught per semester of 16 weeks in person and every 8 weeks there is an evaluation to collect the significant learning of the students, for 8 weeks it was decided to upload

educational videos made by the teacher, one video for each class taught in person, the other 8 weeks it was decided not to upload the videos and compare the results through the grades obtained in each evaluation.

In this research, the research problem is based on this reality and is posed in this way:

General problem: How are the curricular educational videos created by the teacher increased to improve the academic performance of students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo during an academic semester 2024?

Specific problems:

1. How does the use of educational videos complement the teaching-learning process in applied science subjects of the Faculty of Engineering and Architecture?

2. What is the difference in student academic performance between weeks with educational videos and weeks without educational videos?

3. What perception do students have about the use of educational videos created by the teacher in their learning process?

The following objectives are also proposed:

General objective: To implement educational videos created by the teacher to improve the academic performance of students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo.

Specific objectives:

1. To analyze the contribution of educational videos to the teaching-learning process in applied science subjects.

2. Compare students' academic performance during the weeks with educational videos and the weeks without them.

3. Identify students' perception of the usefulness of educational videos created by the teacher in their learning process.

For the research hypotheses, the following are proposed:

General hypothesis: The implementation of educational videos created by the teacher positively influences the academic performance of students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo.

Specific hypotheses:

1. Student academic performance is significantly higher in weeks where educational videos were used compared to weeks where they were not.

In one of the most relevant publications, the objective of the study was to evaluate a didactic strategy of educational videos implemented to improve the results of students in the subject of programming in engineering careers. The sample was made up of a total of 55 second-semester engineering students during the 2019-1 university cycle from February to June at the Autonomous University of Baja California, Mexico. Students' perceptions of the use of educational videos and the impact on their academic achievement were collected, described, and analyzed. The results showed that educational videos are an additional support tool that

motivates students to learn programming. Additionally, an increase of 13.47% was observed in the percentage of approval in the evaluations. It was concluded that the use of educational videos is considered acceptable, as a valuable support tool, by students, although for them it is important to have the guidance and advice of the teacher(Justo-López et al., 2021).

On the other hand, the development of information and communication technologies (ICT) allowed teachers to have a wide variety of computer tools available to enrich their classes, among these we have educational videos that contribute to transmitting knowledge in an audiovisual way. The research proposed, with an active and experimental methodology, the realization of several educational videos of a specific subject that were used as additional material to the face-to-face class by a group of engineering students at the University of Guayaquil. The students accessed these videos through a freely accessible streaming platform from any computer with an internet connection. It was found that their use benefited the assimilation of knowledge, which made them a useful tool for learning the subject in question and served as a basis for their application in other chairs and in basic or higher education in general(Riccio-Anastacio et al., 2017).

Likewise, an article shows the results of a comparative study with a quantitative approach whose purpose was to analyze the impact on academic performance, motivation and the degree of satisfaction of students in basic secondary education when implementing video as an Open Educational Resource (OER) under the Blended learning modality, in the teaching of the subject of Mathematics. The study was carried out in a private institution located south of the city of Monterrey (Nuevo León, Mexico), where through a post-test evaluation and the observation of several activities, a considerable improvement in the academic performance of the experimental group was detected with respect to the control group; likewise, the survey applied to the experimental group showed a high degree of motivation and satisfaction towards the distance modality supported by the use of video as OER(Rodríguez Licea et al., 2017).

In the same way, a study presents a tool supported by a knowledge base, whose content is information on educational competencies and video content carefully selected and linked by experts. With the recent increase in the use of web video services and applications, the visible content that users can use has increased considerably, which is very difficult to differentiate and makes it necessary to constantly develop technologies that handle educational information. The tool developed here uses the Resource Description Language (RDF) and the Web Ontologies Language (OWL). This allows the knowledge base of existing educational videos to be updated and allows the best relationship with the competencies defined in the educational system. It is concluded that the developed tool allows an agile, simple and intuitive process to be carried out for external agents who are not linked to the construction of the knowledge base, but who wish to add information from a context in which they are experts(Celis-Vélez et al., 2024).

It is not easy to define what educational video is, or at least, to do it in a clear and forceful way. The truth is that video is one of the didactic means that, properly used, serves to facilitate the transmission of knowledge for teachers and students to assimilate it. We can define an educational video as one that fulfills a didactic objective previously formulated in a curricular way(Bravo Ramos, 1996).

Academic performance, a complex concept in itself, can be defined as the value attributed to the learning outcomes of university students in a given subject area compared to the level of knowledge expected in their peers(*academic performance - Google Search*, n.d.).

Materials and Methods

The type of research is experimental because the independent variable curricular educational videos is manipulated to see the effect on the dependent variable academic performance, with a quasi-experimental design and related samples, that is, with a single group with pre-test and post-test results due to working with a group of students who are exposed to the independent variable that is the use of educational videos for 8 weeks and then the following weeks 8 weeks without exposure to the videos, this allows us to compare the results of the grades obtained in the partial evaluations of both stages of the semester with and without videos, the grades before and after the intervention evaluate the difference in academic performance attributable to the implementation of the educational videos.

The research adopts a quantitative approach, since it seeks to objectively and numerically measure the influence of the implementation of educational videos created by the teacher on the academic performance of students. This approach allows establishing causal relationships and carrying out statistical analyses that contribute to the verification of the hypothesis raised.

The population is all the students enrolled in the subjects of thermodynamics, water supply, hydrology, fluid mechanics and dynamics of the Faculty of Engineering of the Catholic University of Trujillo, the sample was the totality of the students enrolled in these courses and the experimental unit was each of the enrolled students.

To measure academic performance before and after the application of the educational videos, the grades obtained in the corresponding exams were used, and a comparative analysis was carried out between the grades obtained with educational videos and the grades obtained without educational videos.

On the other hand, in the collection of information, a voluntary anonymous survey was used with closed questions on a Likert scale to analyze the perception of students about the contribution of the videos to the teaching-learning process.

To implement the use of curricular educational videos, the virtual classroom was used and during 8 weeks of the academic semester, an educational video created by the teacher was uploaded for each class taught in person one week in advance. The videos were aligned with the syllabus of each subject and were made available to the students. In the other 8 weeks of the semester, classes were taught in person without the support of curricular educational videos.

At the end of the semester, an anonymous and voluntary survey was applied to collect the students' perception of the usefulness of educational videos.

SPSS and Excel software were used for exploratory analysis and data processing.

Results

To respond to the proposed objectives, an exploratory analysis of the data was carried out using the table that shows the grades before and after implementing curricular videos, to later graph the frequency of grades for each subject and in total.

Curso: Abastecimiento de Agua			Curso: Dinámica			Curso: Termodinámica			Curso: Mecánica de fluidos			Curso: Hidrologia		
Estudiante	Notas		Estudiante	Notas		Estudiante	Notas		Estudiante	Notas		Estudiante	Notas	
	Con videos	Sin videos		Con videos	Sin videos		Con videos	Sin videos		Con videos	Sin videos		Con videos	Sin videos
1	14	7	1	10	14	1	11	9	1	11	8	1	10	14
2	14	8	2	8	9	2	13	13	2	11	8	2	17	15
3	14	8	3	11	10	3	11	11	3	11	11	3	16	14
4	0	4	4	12	9	4	12	12	4	11	9	4	16	14
5	13	3	5	11	10	5	13	11	5	11	9	5	15	13
6	14	14	6	12	9	6	12	10	6	12	9	6	18	15
7	13	6	7	12	10	7	11	10	7	11	9	7	17	15
8	11	8	8	13	9	8	11	9	8	11	10	8	17	14
9	15	8	9	11	11	9	11	9	9	11	9			
10	8	4	10	12	9	10	11	9	10	12	10			
11	12	14	11	12	9	11	12	9	11	12	10			
12	11	8	12	12	8	12	12	11	12	11	10			
13	12	14	13	12	9	13	11	9	13	12	10			
14	11	6	14	12	9	14	12	9	14	14	10			
15	11	6	15	10	12	15	11	12	15	11	10			
16	8	6	16	12	9	16	12	11	16	13	9			
17	8	5	17	12	9	17	11	10	17	13	9			
18	12	4	18	12	9	18	11	14	18	10	14			
19	15	15	19	12	9	19	10	11	19	13	9			
20	11	10	20	12	9	20	12	9	20	11	12			
21	14	0	21	8	9	21	12	9	21	15	9			
22	8	14	22	12	9	22	12	10	22	14	9			
23	5	8	23	10	13	23	12	9	23	13	11			
24	11	8	24	12	9				24	14	9			
25	10	8	25	12	9				25	15	9			
26	14	7	26	11	15				26	12	11			
27	10	5	27	12	10				27	15	10			
28	8	10	28	13	9				28	14	9			
29	10	8	29	12	9				29	15	12			
30	5	8	30	8	9				30	15	10			
			31	11	11									
			32	11	9									
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			41	10	13									
			42	11	9									
			43	13	9									
			44	13	11									
			45	10	10									
			46	12	9									
			47	15	12									
			48	9	12									
			49	9	12									
			50	11	10									
			51	11	10									
			52	14	9									

Figure 1. Frequency of student grades in the Water Supply and Sewerage course. In original Spanish language

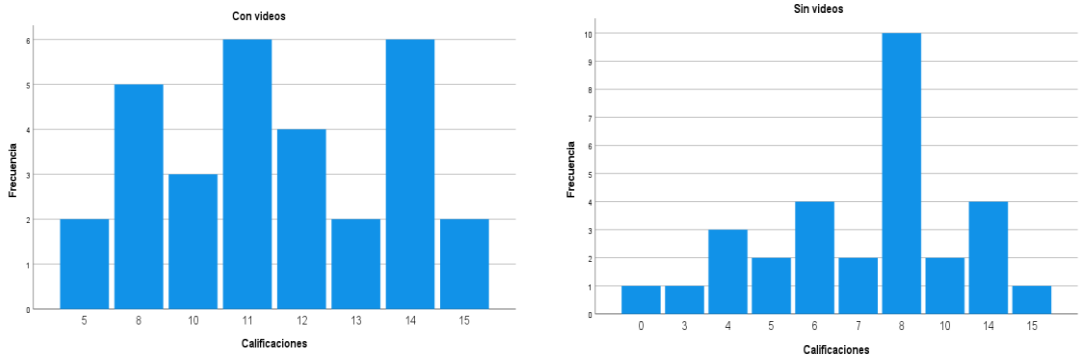
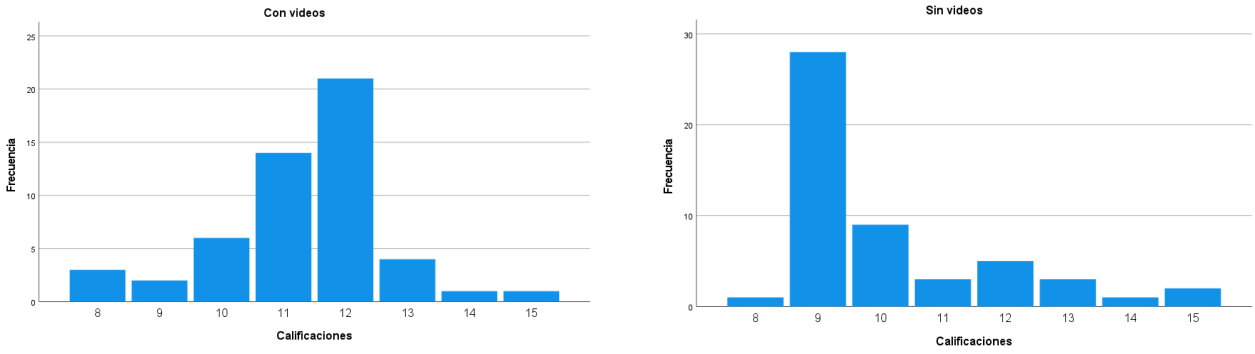


Figure 2. Frequency of student grades in the Dynamics course. In original Spanish language



Graph No. 3. Frequency of student grades in the Thermodynamics course . In original Spanish language

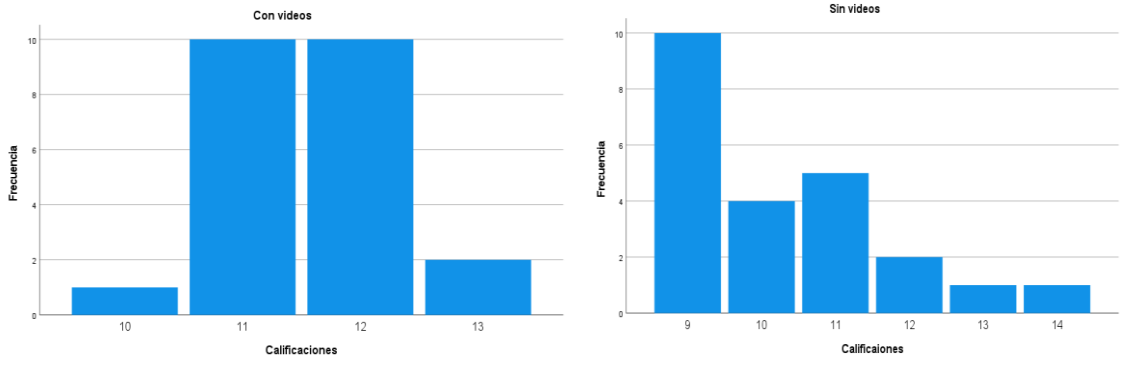


Figure 4. Frequency of student grades in the Fluid Mechanics course. In original Spanish language

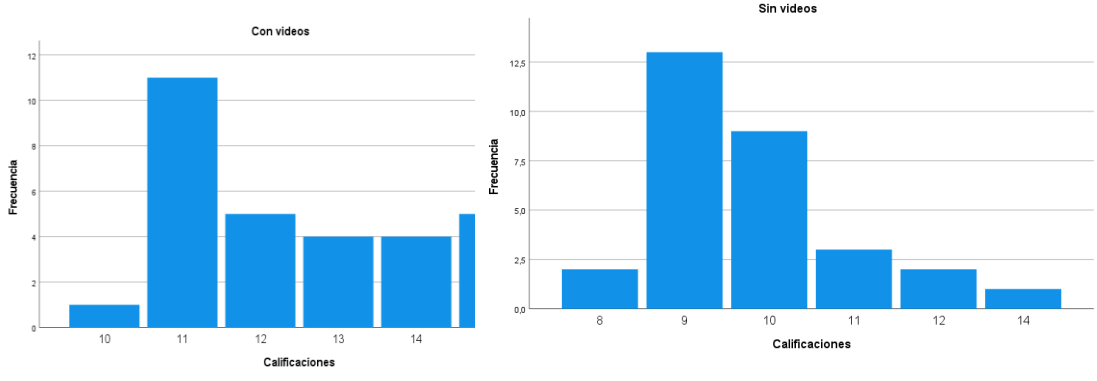


Figure 5. Frequency of student grades in the General Hydrology course. In original Spanish language

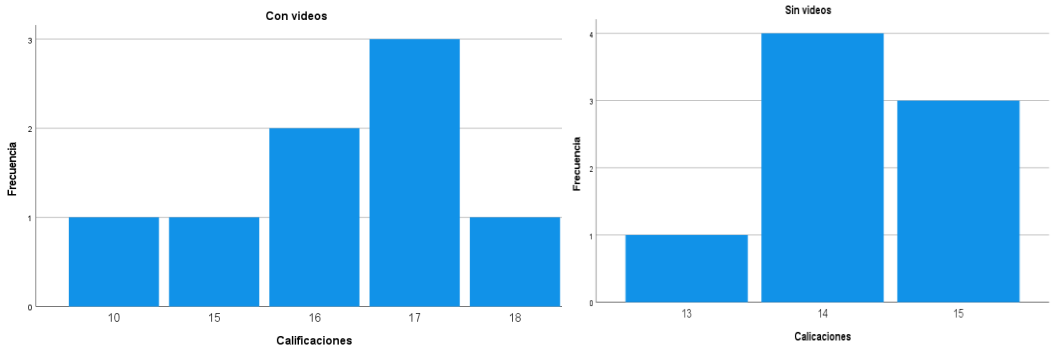
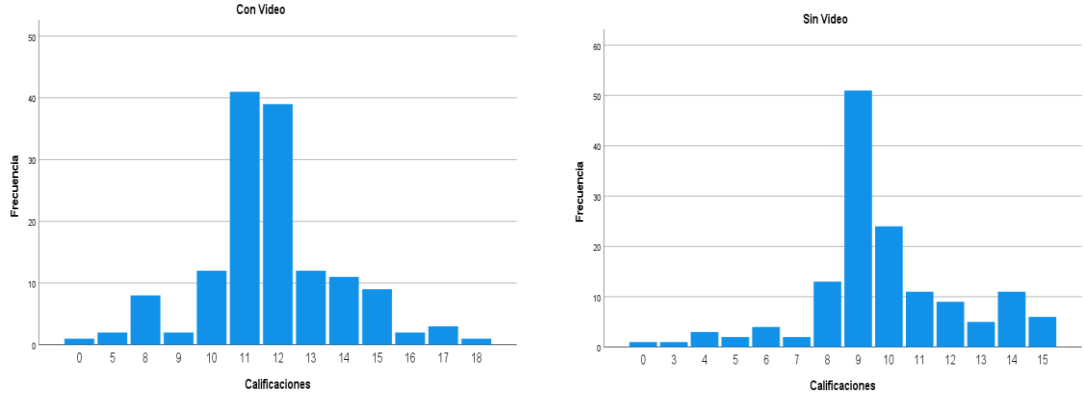


Figure 6. Frequency of grades of the total number of students in the 5 subjects. In original Spanish language



From Figure 6, the distribution of grades with videos is more centered and symmetrical, with most students obtaining grades between 11 and 13. In addition, there is less dispersion at the extremes, i.e., very low or very high grades, which indicates that the use of videos has stabilized academic performance. The highest frequency is around 11 and 12, indicating that these ratings are the most common in this group.

On the other hand, the distribution of grades without videos has an asymmetrical distribution to the left, with a higher number of students with low grades, usually 9. There is more dispersion, indicating greater variability in ratings. The most common grade is 9 and there are more students with low grades compared to the group that studied with videos.

In response to the general objective, we affirm that the implementation of curricular educational videos improves the academic performance of students and makes it more homogeneous, with fewer students with low grades.

The absence of curriculum videos could have influenced lower and more dispersed performance, with a greater number of students with low grades.

For the comparative analysis between the grades before and after implementing curricular educational videos, the following hypotheses were raised. First determine if the grades have normal distribution:

Exploratory analysis of the data:

Level: Quantitative

N = 143 data, corresponds to the Kolmogorov-Smirnov test

hypothesis:

Ho= Notes before and after implementing videos have normal distribution.

H1= Notes before and after implementing videos do not have normal distribution.

Significance level α = 5%

When it comes to related data, the Normality test is done on the difference of the variable.

Difference = Notes with videos-Notes without videos

The data will be normal if the p-value of the statistical test is greater than 0.05.

Using SPSS software.

Pruebas de normalidad

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Estadístico	gl	Sig.	Estadístico	gl	Sig.
Diferencia	,154	143	<.001	,950	143	<.001

a. Corrección de significación de Lilliefors

Table No. 2. Test of Normality of Grades. in Original Spanish Language

Table No. 2. Test of normality of grades. In original Spanish languageAfter observing the data of the difference variable and given that the sample is greater than 50 (134 data), the Kolmogorov-Smirnov test was used and it is observed that there is no normal distribution because the p-value is < 0.05 (α).

Therefore, as the data are quantitative and the distribution is not normal, Wilcoxon's nonparametric test will be used for related groups and the following hypotheses are raised:

Ho = Student grades are equal before and after the implementation of educational curricular videos.

H1 = Student grades are higher after the implementation of curricular educational videos.

Significance level: 5%, if the p-value > 0.05, we accept H1.

Resumen de contrastes de hipótesis

	Hipótesis nula	Prueba	Sig.[a,b]	Decisión
1	La mediana de diferencias entre Con Video y Sin Video es igual a 0.	Prueba de rangos con signo de Wilcoxon para muestras relacionadas	<.001	Rechace la hipótesis nula.

a. El nivel de significación es de ,050.

b. Se muestra la significancia asintótica.

Table No. 3. Wilcoxon Nonparametric Test. In Original Spanish Language

In Wilcoxon's test, the p-value < 0.05, so we reject the null hypothesis and accept the research hypothesis.

Figure 7. Differences In Ratings Before And After Implementing Videos. In Original Spanish Language

Figure 7 plots the differences between the Video-Non-Video scores versus the frequency of these differences. There are 109 positive differences that represent the cases where the results "With Video" were higher than "Without Video", which indicates a clear majority. There are also 25 negative differences that represent the cases where the results "Without Video" were higher than "With Video", but they are much less frequent and it is also observed that there are 9 ties, that is, that the videos did not influence the academic performance of the students.

In response to the specific objective, students' academic performance is significantly higher in the weeks where curricular educational videos were used compared to the weeks in which they were not.

To respond to the objective of the student's perception of curricular educational videos, a survey was carried out at the end of the semester. (Annex 2)

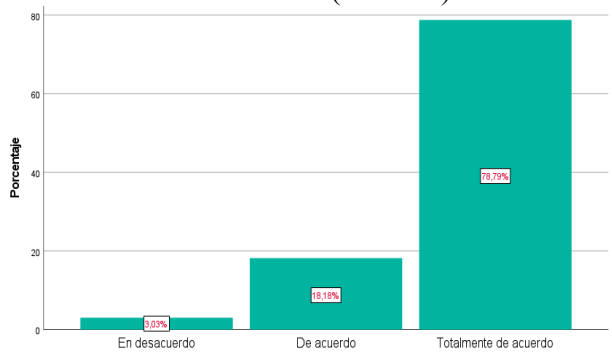


Figure 8.

Do you think that educational videos effectively complement the explanations given in class?. In original Spanish language

78.9% of students consider that educational videos are a very effective complement to explanations in class. This validates the use of videos as a valuable and widely accepted pedagogical tool.

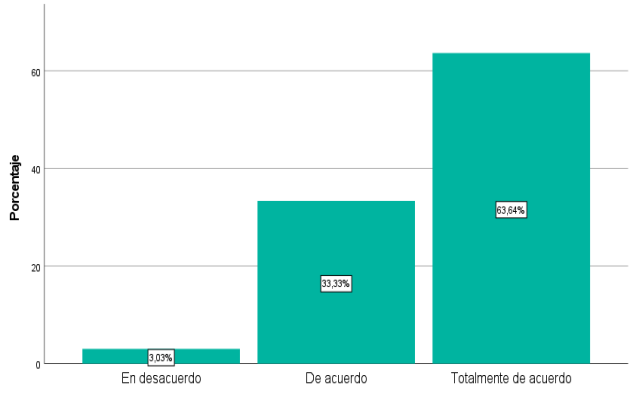


Figure 9. Did The Educational Videos Help You Better Understand The Complex Concepts In The Course?. In Original Spanish Language

63.64% of students perceive that the educational videos were significantly helpful in understanding complex concepts. This result highlights the effectiveness of videos in addressing difficult topics, possibly due to visual explanations, practical examples, or the possibility of revising them several times.

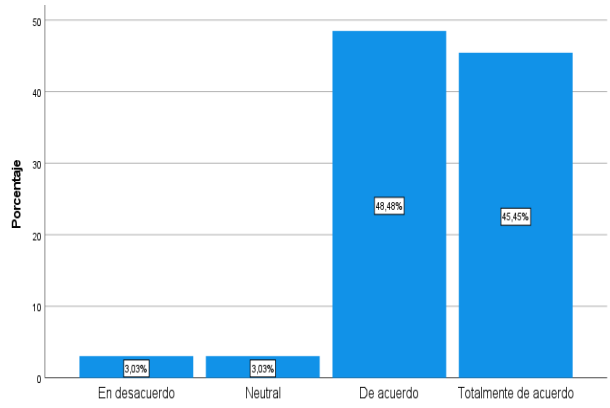


Figure No. 10. Did The Availability Of Videos Increase Your Motivation To Study?. In Original Spanish Language

The vast majority of students, 48.48% agree and 45.45% strongly agree, indicate that the availability of videos has increased their motivation to study. This suggests that educational videos are an effective tool for capturing students' interest and making learning more engaging.

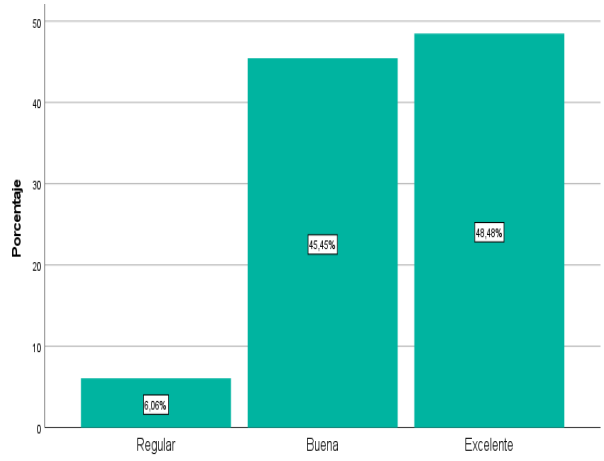


Figure 11.

How would you rate the quality of the videos in terms of clarity and content?

48.48% of respondents consider the quality of the videos to be excellent in terms of clarity and content. This indicates that the videos are easy to understand, have a good production, and the information presented is relevant and useful. 45.45% also rate the quality of the videos as good. This suggests that while videos may have some small details to improve, they generally meet students' expectations.

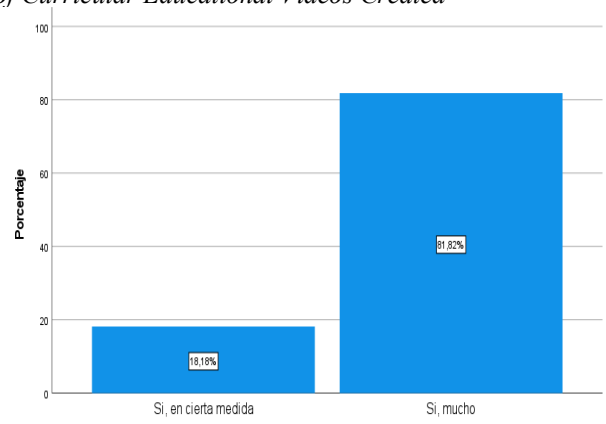


Figure 12.

Did the videos allow you to reinforce what you learned in class outside of face-to-face hours?. In original Spanish language

81.82% of students say that educational videos allowed them to significantly reinforce what they learned in class outside of face-to-face hours. This suggests that videos have become an effective tool to complement classroom learning and consolidate the knowledge acquired.

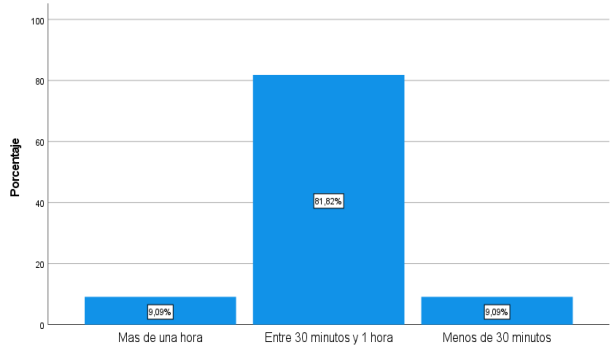


Figure 13.

How much time did you spend reviewing the videos after each class?. In original Spanish language

81.82% of students spent between 30 minutes and an hour reviewing videos after each class. This indicates that the students considered this time range as the most appropriate to reinforce the knowledge acquired in class.

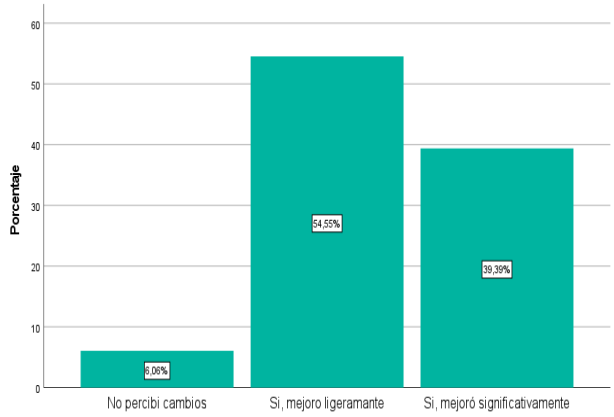


Figure 14.

Did you notice any improvement in your academic performance during the stage in which videos were used?. In original Spanish language

54.55% indicated that their academic performance improved significantly thanks to the implementation of the videos. This suggests that the videos had a positive and tangible impact on the learning process of these students. 39.39% indicated that they perceived a slight improvement in their performance. Although not as marked as in the previous case, this response also indicates a positive trend.

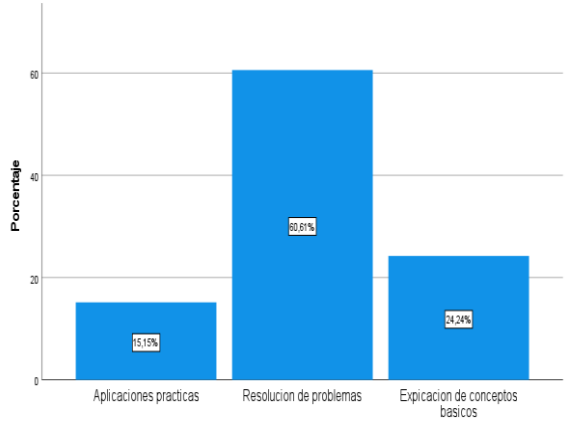


Figure 15.

What specific aspects of the course do you think the videos helped reinforce?. In original Spanish language

This figure shows that educational videos had a greater impact on reinforcing problem-solving compared to practical applications and explaining basic concepts. This suggests that the videos were particularly useful in helping students develop critical thinking skills and apply what they learned in problematic situations.

Conclusions

In the video group, the center of the rating distribution is in a higher range between 11 and 12 compared to the non-video group which is at 9. This indicates that curricular educational videos contribute to improving average grades, in addition the group with videos has a more compact distribution, while the group without videos shows greater dispersion of grades in the lower and upper ends.

The use of videos results in more consistent and elevated performance, reducing the proportion of students with low grades.

The graphs indicate that the use of curriculum videos is associated with an improvement in academic performance and a decrease in variability in grades.

Based on Wilcoxon's graph, we affirm that the use of educational videos as a complement improves the academic performance of students compared to the stage where they did not use it. This is in line with the decision obtained in the Wilcoxon table, where the null hypothesis was rejected, confirming that there is a significant difference between the two conditions, with higher academic performance in the stage where students did use the videos.

Student perception graphs demonstrate that educational videos have significant potential to increase student motivation and improve their academic performance. By implementing this tool strategically, a more dynamic and engaging learning environment can be created for students.

Educational videos prove to be an effective tool for reinforcing problem-solving in students. By continuing to develop and use these types of resources, the quality of education can be significantly improved and students prepared to meet real-world challenges.

Students' overall perception of educational videos is predominantly positive. Almost 94% of the students rated them as good or excellent, which supports the implementation of this tool in the process of their learning.

This research allowed to rigorously analyze the influence of the implementation of educational videos created by the teacher on the academic performance of students of the Faculty of Engineering and Architecture.

Annexes

Annex 1:

Consistency Matrix

Implementation Of Curricular Educational Videos Created By The Teacher As A Complement To Face-To-Face Classes To Improve The Academic Performance Of Students Of The Faculty Of Engineering And Architecture Of The Catholic University Of Trujillo, 2024.

GENERAL PROBLEM	GENERAL OBJECTIVE	GENERAL HYPOTHESIS	VARIABLES
How are the curricular educational videos created by the teacher implemented to improve	Implement curricular educational videos created by the teacher to improve	The implementation of educational curricular videos created by the teacher significantly	Independent: Curricular educational videos created by the

GENERAL PROBLEM	**GENERAL OBJECTIVE**	**GENERAL HYPOTHESIS**	**VARIABLES**
the academic performance of the students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo?	the academic performance of students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo.	improves the academic performance of students of the Faculty of Engineering and Architecture of the Catholic University of Trujillo.	teacher. Dependent: Academic performance. -Rating without videos -Qualification with videos - Student perception.
SPECIFIC PROBLEMS	**SPECIFIC OBJECTIVES**	**SPECIFIC HYPOTHESES**	
How does the use of educational videos complement the teaching-learning process in applied science subjects of the Faculty of Engineering and Architecture?	To analyze the contribution of educational videos to the teaching-learning process in applied science subjects.		
What is the difference in student academic performance between weeks with educational videos and weeks without educational videos?	Determine the difference in students' academic performance during weeks with educational videos and weeks without videos.	Student academic performance is significantly higher in weeks where curricular educational videos were used compared to weeks where they were not used.	
What perception do students have about the use of educational videos created by the teacher in their learning process?	Identify students' perception of the usefulness of educational videos created by the teacher in their learning process.		
Quasi-experimental research design.			

Annex 2:

Survey Model on the Use of Curricular Educational Videos in Face-to-Face Classes.

Dear student: The objective of this survey is to know your experience and opinion about the use of educational videos as a complement to face-to-face classes. Your participation is voluntary and responses will be anonymous. The data obtained will be used only for research purposes to improve the teaching-learning process.

Variable 1: Overall Perception of Video Usage

1. Do you think that educational videos effectively complement the explanations given in class?

- ☐ Totally agree
- ☐ I agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

2. Did the educational videos help you better understand the complex concepts in the course?

- ☐ Totally agree
- ☐ I agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

3. Did the availability of videos increase your motivation to study?

- ☐ Totally agree
- ☐ I agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

4. How would you rate the quality of the videos in terms of clarity and content?

- ☐ Excellent
- ☐ Good
- ☐ Regular

o ☐ Deficient

Variable 2: Learning Performance

5. Did the videos allow you to reinforce what you learned in class outside of face-to-face hours?

o ☐ Yes, very much

o ☐ Yes, to some extent

o ☐ Not much

o ☐ No

6. How much time did you spend reviewing the videos after each class?

o ☐ Less than 30 minutes

o ☐ Between 30 minutes and 1 hour

o ☐ More than 1 hour

o ☐ He did not check them

7. Did you notice any improvement in your academic performance during the stage in which videos were used?

o ☐ Yes, it improved significantly

o ☐ Yes, it improved slightly

o ☐ I didn't notice any changes

o ☐ My performance decreased

8. What specific aspects of the course do you think the videos helped reinforce?

o ☐ Explanation of theoretical concepts

o ☐ Troubleshooting

o ☐ Practical applications

o ☐ Other (specify): _____.

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