Study habits based on audiovisual resources as mediators of academic performance in university students.

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ABSTRACT

Audiovisual resources such as visual images and video games help improve various academic areas of students, especially in study habits, an aspect associated with academic performance. This research aimed to determine to what extent study habits based on audiovisual resources function as mediators of academic performance in university students. For this purpose, we worked with a sample of 287 university students between the ages of 16 and 25, to whom two questionnaires were administered that evaluate study habits and perception of academic performance. The analyzes indicated significant correlations, in the same way the proposed model on study habits based on audiovisual resources improves the conditions of academic performance. This study highlights the importance of using strategies and audiovisual media to improve study habits in students and in this way university students have greater performance in academic activities, achieving their purposes and professional future.

1. Introduction

The university problems related to academic performance are diverse and complex, ranging from the psychological aspects linked to the learning process to the social, cultural and economic mediators that characterize performance and the possibilities for improvement. One of the most important elements linked to the learning process is usually the study habits as a valid predictor of the results that students obtain in their passage through school and later at the University. Audiovisual resources are strategies that help to improve study habits, therefore, they should be considered in all areas of the academic context for the good performance of students.

Study habits are defined as the set of strategies and ways in which students learn and process information, generating an adequate performance in academic activities (Chang et al., 2014; Pugatch & Wilson, 2018) which are gradually acquired and strengthened (Carden & Wood, 2018). An important aspect to take into account is how study habits that determine the characteristics of academic performance are developed (Quilez-Robres et al., 2021; Yeh et al., 2013). It has been evidenced that the academic performance of students, presents some difficulties which is probably related to study habits and the lack of implementation of audiovisual resources that allow better information processing.

When talking about audiovisual resources in the international arena, two out of five students who enroll in college fail to graduate within six years, that is, more than one third do not conclude their studies in the established time (Pugatch & Wilson, 2018). Young people who present problems in academic performance, employ negative study strategies during the formative years, indicating that it is critical to develop study skills employing audiovisual resources to respond favorably to the demands of the university context (Felicilda-Reynaldo et al., 2017; Carden & Wood, 2018). In a study conducted in Ethiopia, India, Pakistan, Peru, and Vietnam, it was found that children from low socioeconomic backgrounds who obtain high scores on achievement tests, at age 12 report greater interest in entering college (Das et al., 2022).

In a national context, studies by Vargas et al. (2018), reflected that increased study hours are related to mood states such as anxiety and depression in medical students. On the other hand, in a sample of 1620 students, it was found that critical thinking has a positive impact on the average academic performance of students (D'Alessio et al., 2019). So also, problems in academic performance in university students due to the impacts of the pandemic and migration to the remote modality (Rodriguez-Alarcon et al., 2022). Another cause of low academic performance in university students has been the limited socioeconomic conditions and educational environments lacking audiovisual materials to facilitate learning (León & Valdivia, 2015).

Lack of audiovisual resources is a problematic, it is understood that study habits act as correlates of students' academic performance. The action-emotion style and inadequate study habits explain the responses that students have in their assignments (De la Fuente & Cardelle, 2009; Beattie et al., 2019). Students who apply better strategies to study have better student performance, so a trend could be the application of audiovisual resources in changed those who do not know how to plan an effective organization of time and schedule management present difficulties in educational demands (Quilez-Robres et al., 2021; Barrientos-Fernández et al., 2019).

Academic performance should be based on audiovisual processes and is an integral part in the teaching and learning process (Olutola & Ademola, 2016), therefore, to avoid academic failure, an appropriate intervention related to fostering effective habits to achieve academic success should be created (Hua Studies (2022). Studies show implications of different factors on academic performance that cause variation in students' success.

Several research studies have been carried out with samples of mostly high school students and students in the first cycles of universities. A study conducted by Ortega-Ruipérez (2022) in Spain with students from various disciplines of higher education, determined that the use of metacognitive strategies is effective in improving academic performance, suggesting the inclusion of metacognitive strategies in the use of blended learning to improve study habits and reading comprehension in students. Another research conducted in China explored the mediating role of cognitive engagement in the relationship between emotional intelligence and study habits in health science students, concluding that students face greater challenges than usual in building study habits in blended learning

environments and that emotional intelligence helps develop their study habits more effectively (Iqbal et al., 2022).

In the Peruvian context, a research conducted in students of a public university analyzed the association of study habits and academic stress, where 77% of the students presented a moderate to deep level of stress; regarding study habits, 13% in total have study habits from a very negative to a negative level. This indicates that young people state that their usual strategies and techniques for obtaining information and the way they perform their tasks do not allow them to obtain an optimal result (Dávila et al., 2022). On the other hand, Chilca (2017) conducted a study that aimed to establish whether self-esteem and study habits correlate with academic performance in university students, applying the Coopersmith Self-Esteem Inventory, the Vicuña Peri Study Habits Inventory and the average grades obtained by students, finding that self-esteem does not significantly impact academic performance, but study habits do.

There is consensus that study habits are related to metacognitive strategies, learning, cognitive engagement and emotional intelligence; as well as associated with stress and self-esteem (Chilca, 2017; Dávila et al., 2022; Iqbal et al., 2022). What is not well defined is how study habits improve in the academic performance of university students, especially considering the audiovisual resources that can be used in the classroom as strategies that facilitate the acquisition of learning. Therefore, this constitutes an area to be explored, and deserves a necessary approach to promote adequate learning in students achieving higher academic performance and can successfully complete their university careers. Under these considerations and limitations, this research seeks to describe the positive characteristics of study habits and academic performance, as well as to establish an explanatory model to ensure academic success in college students considering audiovisual materials to achieve better performance in the academic area.

2. 2. Method

2.1. Research design

It was a technological type of work where theoretical knowledge was used to propose intervention strategies (Sánchez et al., 2018) that are based on study habits that improve students' academic performance. It is also of causal correlational design because it was determined to what extent the behavior of study habits can explain the academic functioning of students (Hernández & Mendoza, 2018).

2.2. Participants

The present research study consisted of 287 higher education students from private universities in northern Peru, 55% female and 45% male, who participated freely in this study. Inclusion criteria included students of engineering, business and accounting majors from private universities in Piura. Exclusion criteria included students from public universities, students from other sectors of Peru, and students who did not agree to participate.

2.3. Instruments

The first instrument was the study habits perception questionnaire developed by Madrid et al. (2017), which consists of 19 items with a Likert-type design with five response alternatives ranging from completely disagree to completely agree; its purpose is to measure the perception of study habits in higher education students in three dimensions: learning orientation, organization and time management. The original psychometric properties were the following: construct validity with a KMO value of 0.984, Bartlett's test of sphericity was significant; on the other hand, the reliability of the three dimensions presented a Cronbach's alpha higher than 0.750. For this research, adequate psychometric properties were also evidenced, in terms of validity, comparative adjustment indexes higher than 0.90 were found, the factor loadings were higher than 0.40, confirming the factors proposed in the original model. The reliability of the study habits perception scale had a reliability of 0.90 obtained through Cronbach's alpha.

The second instrument was the university academic performance questionnaire developed by Preciado-Serrano et al. (2021), made up of 20 items, has a seven-point Likert-type scale from 0 (never) to 6 (always) and is structured in three dimensions: contribution to academic activities, dedication to study and lack of organization of didactic resources; its purpose is to measure academic performance in university students. With respect to the psychometric properties, the authors of the instrument determined that the adjustment indexes of the confirmatory factor analysis were within the established parameters and the Cronbach's Alpha reliability of the dimensions was acceptable. Similarly, in this research, the construct validity has been found to have comparative fit indices higher than 0.95, and the reliability a value of 0.80.

2.4. Procedure

The first step of the research was the elaboration of the instruments using Google forms, contemplating sociodemographic data such as gender, age range, study center, place of origin, among others. Next, coordination was made with university directors to request support for the application of virtual instruments together with the informed consent, which were sent via e-mail provided by the authorities. Once this phase was concluded, the data were collected and tabulated using Microsoft Excel. Finally, the tabulated data were transferred to the SPSSv26 statistical software for descriptive and inferential analysis of the information.

2.5.   Data analysis

Measures of central tendency and deviation were obtained as the mean and standard deviation. Skewness and kurtosis were used to obtain the normality of the data. Because the data did not follow a normal distribution, Spearman's statistic was used to determine relationships between variables. Finally, linear regression was used to establish predictions between study habits and academic performance.

3. Results

This section presents the main findings of the research, which are aligned with the stated objectives. It begins with a descriptive analysis of the variables and their dimensions, followed by an exploration of the correlations between variables and, finally, a summary of the model based on linear regressions is presented.

Table 1:. Descriptive analysis of the variables at the general level and by dimension.

	N	Min	Max	Media	SD	Asymmetry	Kurtosis
Perception of study habits	287	25	95	76,75	8,904	-,648	3,405
Learning orientation	287	12	50	41,91	4,589	-1,098	5,478
Organization	287	6	25	19,56	3,020	-,700	2,608
Time management	287	7	20	15,28	2,392	-,265	,536
Academic performance	287	37	120	69,92	14,945	,172	-,044
Contribution to academic activities	287	15	60	38,29	10,190	,033	-,550
Dedication to study	287	8	30	22,29	5,340	-,426	-,729
Organization of teaching resources	287	0	30	9,33	5,116	1,427	3,151

Source: Own elaboration

In the descriptive analysis of the variables, the following results are observed: the total sample was 287 students, the study habits variable had a minimum score of 25 and a maximum of 95; the mean was 76.75 and a standard deviation of 8.904. When analyzing the academic performance variable, the minimum score was 37 and the maximum 120, the arithmetic mean was 69.92 with a standard deviation of 14.945. Regarding the analysis of normality, it is observed that the two variables together with their dimensions do not have a normal distribution because all the values are not within -1.5 and 1.5 which

is the standard test value. Therefore, non-parametric tests were used to perform the corresponding analyses.

Table 2: Relationship between study habits based on audiovisual resources and academic performance**.**

			Contribution to academic activities	Dedication to study	Organization of teaching resources	Academic performance
Spearman's Rho	Study habits	Correlation coefficient	,662**	,675**	-,202**	,663**
		Sig. (bilateral)	,000	,000	,001	,000
		N	287	287	287	287

Source: Own elaboration

According to the results of table 2, between study habits and perception, there is a significant relationship (,663** sig. 0.000), in the same way this relationship is corroborated in the analysis by dimensions. The organization of activities has a relationship of 0.675**, dedication to study 0.675**, organization of didactic resources -.202**. Therefore, good practices of study habits considering audiovisual strategies such as videos, visual media among others, are associated with adequate academic performance in this community of students.

Table 3. Relationship between the perception of academic performance and study habits based on audiovisual resources.

			Learning orientation	Organization	Time management	Study habits
Spearman's Rho	Academic performance	Correlation coefficient	,600**	,595**	,565**	,663**
		Sig. (bilateral)	,000	,000	,000	,000
		N	287	287	287	287

Source: Own elaboration

Table 3 presents the findings of the correlations between academic performance and study habits. It is evident that academic performance and study habits have a direct and significant relationship of 0.663**, learning orientation obtains an association of 0.600**, organization 0.595** and time management 0.565**, that is, at a general level and by dimensions, a significance of 0.000 has been found. These results help to understand that a better academic performance for this population is associated with the practice of good study habits from the interaction with audiovisual resources helping to generate successful learning.

Table 4. Summary of the proposed model of study habits based on audiovisual resources to improve academic performance**.**

Model	R	R square	Adjusted R-squared	Standard error of the estimate
1	,613a	,376	,374	11,827

a. Predictors: (Constant), Study habits.

Source: Own elaboration

In Table 4, it is observed that between study habits based on audiovisual resources and the perception of academic performance there is a relationship of 0.613, an R square of 0.37, which indicates that study habits through visual media explain 37% of the way in which the conditions of academic performance are developed.

Table 5: Significance of the observed data

Model		Sum of squares	Gl	Root mean square	F	Sig.
1	Regression	24007,704	1	24007,704	171,620	,000[b]
	Waste	39868,289	285	139,889		
	Total	63875,993	286			

Source: Own elaboration

According to the results of Table 5, it is observed that study habits significantly explain the behavior in the perception of academic performance of the students. In other words, the proposed model is highly significant, which indicates that when audiovisual strategies and resources are used appropriately, study habits improve, which has a positive impact on students' academic performance.

Table 6: Description of coefficients of the proposed model on study habits based on audiovisual resources and academic performance.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Error	Beta		
1	(Constant)	-9,059	6,069		-1,493	,137
	Study habits	1,029	,079	,613	13,100	,000

a. Dependent variable: Academic performance.

Source: Own elaboration

It is evident in the description of the coefficients of the proposed model, there is a significance of 0.000 between study habits and academic performance. This means that study habits is the independent variable that substantially explains how academic performance develops. Consequently, the equation is y=-9.06+1.03*x. Therefore, a program that considers audiovisual resources within the classes helps to strengthen study habits which would improve the conditions in the academic activities of university students.

4. Discussion

Audiovisual resources such as visual images, video games and many more, have several benefits for students, one of them being study habits, because when these strategies involving video games, music, or any media that have to do with visual stimulation of students, make them develop better study habits, which in turn improves academic performance. Given the limitations in accessing works where the relationships between study habits that have to do with students' decisions about what to learn and how to learn during their daily learning processes are established (Anthenien et al., 2018; Zhou et al., 2022) and their link with academic learning understood as the capabilities that students have to respond favorably in activities in an educational context (Yamamoto & Holloway, 2010; Rienties et al., 2012).

The first objective of this research was to determine the relationship between study habits based on audiovisual resources and the perception of academic performance in university students, finding a direct and significant relationship (,663**, sig. 0.000) (Table 2), likewise the dimensions of academic performance have a direct relationship with study habits. This means that study habits based on audiovisual resources in the classroom and adequately developed, have an impact on successful academic performance. On the contrary, if the implementation of visual resources or materials is not considered, study habits would not be satisfactorily developed, which is probably associated with poor academic performance. When crossing the relationships between the perception of academic performance and study habits, highly significant relationships were found (Table 3), which means that a good academic performance is associated with the good practice of study habits considering visual materials within the exercise of class development.

Theoretically, it has been proven that when adequate study strategies are developed considering audiovisual resources, optimal learning is promoted helping to fulfill academic responsibilities (Hora & Oleson, 2017; Williams et al., 2002). Likewise, employing different learning resources and encouraging appropriate study habits help university students to improve their performance in cognitive functions. Therefore, it is important to strengthen such behavior as it helps to generate an adequate learning process (Jameel et al., 2019; Tobar et al., 2021). Research conducted in different countries has found analogous results. Thus, Ortega-Ruipérez (2022) in Spain determined that the use of metacognitive strategies has shown effectiveness in academic performance, so he suggests the inclusion of these strategies during blended learning to improve study habits and reading comprehension in students developing greater learning. For their part, Iqbal et al. (2022) in China have found that cognitive engagement and emotional intelligence improve the conditions of study habits.

The results found have the following practical implications. First, within universities and educational institutions in general, the implementation of visual materials to increase study habits should be considered. These activities would help to improve the learning that has occurred in recent years, not because their cognitive abilities are deficient, but because they had to enter the virtual system, a totally new environment for students to explore, and because various audiovisual resources were not used to enhance study habits that respond to the needs of the students. Second, having found that there is a direct and significant association between study habits and academic performance, allows establishing a baseline to perform other types of linear regression analysis in order to understand to what extent study habits based on visual resources such as images and videos act as correlates of academic performance.

The second objective was to perform a linear regression analysis between study habits and the perception of academic performance, based on the correlations observed in the first objective. An R-squared of 0.37 was found (Table 4), which means that study habits would improve students' academic performance by 37%. The proposed model was found to be significant and in the description of the coefficients study habits significantly explained academic performance because the significance was 0.000. The implications of these results indicate that a program that employs audiovisual resources such as visual images and video games increase better study habits and consequently students will perform better in the area of academics. Theoretically, these data mean that the strategies used by each person help to build a better learning since they are based on personality characteristics (Anthenien et al., 2018; D'Souza & Broeseker, 2022), consequently, they improve their academic performance levels to continue with their studies and to be able to realize their life projects.

Results that are related to recent work. For example, in the Netherlands, small study groups have been found to improve academic performance conditions in medical students (Brouwe et al., 2022), other research in Portugal has found that academic performance has as predictors variables such as educational commitment, study skills, motivation and classroom environment conditions (Moreira et al., 2013). In Belgium, divergent thinking has been found to improve the academic performance of engineering students as it acts as a mediating function (Taylor & Zaghi, 2022). In Peru, no studies have been found that explain the mediating role of study habits and academic performance, some research has correlated study habits with academic stress, finding that students state that their usual strategies and techniques for obtaining information and performing tasks do not allow them to obtain an optimal result (Dávila et al., 2022). Another study on study habits and self-esteem has concluded that self-esteem does not impact academic performance, but study habits do (Chilca, 2017).

The analysis of the results allows us to highlight the following. First, academic performance has always been evaluated on the basis of aptitude, that is, on the basis of grades, so that the highest grades indicated that the students had an adequate school performance; the contribution of the study is to have evaluated academic performance from the student's perception; it is important to consider the attitudes and perceptions that they have in order to improve the dynamics of learning. Second, the research that has been accessed has analyzed academic performance considering other variables, but there are limited studies that have established predictions between study skills and success in their performance; therefore, this research at the national and regional level constitutes a precedent to encourage other researchers. On the other hand, these findings represent a basis for developing programs and workshops on study habits that allow students to achieve significant learning that respond to professional competencies. These educational programs should consider the implementation of visual

images and videos, which would help to develop better study habits and facilitate the acquisition of new learning in the educational community.

5. Conclusions

Considering that audiovisual resources, such as visual images, video games among other analogous materials, contribute to improve several cognitive aspects of people, especially study habits, facilitating ideal learning in university students. It has been found that the way students develop their study habits considering the implementation of audiovisual resources is an explanatory factor in the quality of academic performance. These significant relationships have also been proven at the level of dimensions, which means that organization and planning are strategies that help students to have a higher level of academic performance.

The proposed model turns out to be highly significant, study habits based on audiovisual resources are significant predictors of academic performance. This suggests that a program based on study habits that considers the implementation of visual images, videos and video games would improve the levels of academic performance of university students, help them to build meaningful learning and meet their expectations related to the academic part to have a better professional development in the future.

One of the limitations of the study was that it worked with university students; it is unknown how the implementation of audiovisual strategies would increase study habits in high school students to promote effective learning. Another limitation is that we worked with a non-probabilistic sample, therefore, the results cannot be extrapolated to other academic contexts. Therefore, it is recommended that further research apply the instruments to different units of analysis, such as high school adolescents, selecting a sample based on probabilistic methods so that the results can be a reference for other educational institutions in the implementation of plans to improve study habits based on audiovisual resources for the adequate acquisition of learning.

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