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The Influence of Technology on the Academic Performance of Students at the "Uruguay" Fiscal Educational Unit for the 2021-2022 School Year

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Abstract---*The objective of this research is to analyze the influence of technology on the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year. The methodology that was used is of a qualitative-quantitative type, with a descriptive design, it is field, correlational, and non-experimental. The population is made up of 1,200 students from the "Uruguay" Fiscal Educational Unit, obtaining a sample of 291 students to be surveyed. With the SPSS® statistical program and Cronbach's Alpha coefficient, a reliability of 0.824 was obtained; In addition, with the results obtained from Spearman's Rho coefficient of 0.778 in the general hypothesis, it is verified that students are clear that technology currently has a positive impact on the educational environment, since it improves educational effectiveness and didactic methods, contributing to the teaching-learning process and strengthening academic performance.*
Keywords---*academic performance, educational context, learning, students, technology*.

Introduction

The influence of technology on the academic performance of students causes a lot of controversy nowadays due to its long social and educational reach, and for this reason, research is necessary to answer the unknowns that appear as this influence increases. The answers to certain unknowns, based on concrete facts, give rise to the formulation of certain hypotheses that would lead to a theory that tries to describe those social phenomena such as the influence of technology today. Indeed, they also have the possibility of dismantling old theories considered valid up to that moment, such as the fact of whether or not said influence, which we will deal with in this investigation, is good or not. Technologies serve to improve communication, however, they also cause poor performance and isolation in children, so the increased use of these technologies facilitates study in some cases, but they are also related to the low performance of students in schools.

As we know, many students do not use technology for learning purposes, but use it for other types of things, such as playing games, browsing social networks, among other things. And that's why sometimes students have poor academic performance. Teens use tools like search engines and wikis for homework and academic work, podcasts for fun, and instant messaging to connect with others. Therefore, adolescents consciously select tools based on their purpose, which may be due to the extensive functional knowledge that young people have of these tools (García-Martín & Cantón-Mayo, 2019). At present, a large part of the students know many technological advances and know how to use it perfectly, and they use these tools for their independent study and others use it as a means of communication and others simply use it as a way to amuse themselves.

The focus of this article is to verify the performance of students in the classroom, see how didactic tools are used when teaching a class and see if it has a significant contribution in the development of student learning. We can see that up to now education follows a methodology that has been going on for decades without little evolution in the way of imparting knowledge and generating a great impact on education, we considered the analysis of where education is currently heading to make that leap in one Before and after the way of imparting knowledge to students,

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the main contribution of this work is to see how teachers implement technology in the classroom, and see how students adapt to the technology present in the classroom. class to then draw conclusions about the methodological impact on school academic performance.

Literary Review

For many years there has been discussion about the effects of technology on students, about its effectiveness when working around different subjects in school, around teacher training and student preparation and centers, or about the incidence of digital tools on school performance Organization For Economic Cooperation And Development - Oecd (2015); Shank et al. (2019); Zhao (2009) quoted by (Miguel-Revilla, 2020). This is a topic that has been discussed for many years since they saw that technology was advancing more and more with the passing of time, and for this reason it was necessary to implement technology for student learning. At present, institutions have increased technology since the world today advances much faster than we think and all people are adapting to this.

Individuals need to communicate and for this, modern and expensive technological instruments are created that are often not available to all people, but they still acquire them. The boys who today are between the ages of 5 and 15 are the first generation in the world to have grown up immersed in these new technologies, they have spent their entire lives surrounded by computers, video games and other digital tools, so it is not surprising that These technologies are present in their daily lives, therefore, they are also present in educational institutions to have better quality teaching. Many times adolescents do not use technology properly since they only look for how to watch games, videos and many other things and they do not intend to study in order to reach a better future. The distraction is not necessarily focused on learning, moving towards recreational activities unrelated to the learning object, addiction to certain programs such as chats and video games, unreliable, obsolete or wrong information, incomplete and superficial learning that is not always of quality and frequently out of context with reality (Jaya et al., 2020; Baque et al., 2020).

It is important to insist that the success of ICT-based education depends to a large extent on the understanding, preparation and ability of the teacher to change the orthodox methods of teaching and learning, putting opportunities at the service of teaching-learning, the media and resources for these technologies (Granda Ayabaca et al., 2019). According to Arroyo & Cid (2013), they mention that sometimes, we assume that all students have access to ICT, therefore, activities are planned assuming this fact. Sometimes there are students who, due to their economic and social situation, cannot access them. In addition, the inappropriate use of the computer, video games and mobile phones can cause serious health problems and there is already talk of "technological diseases".

Technology has also been brought to institutions with inclusive students as it is good practice for them. According to Alcantud et al. (2003) cited by Peñarrocha & Suelves (2016) they indicate that "the use of technologies as a means to increase, maintain or improve the functional capacities of individuals is a common practice in the field of intervention with people with disabilities" (p. 1). The Ministry of Education promoted the creation of computer systems that support the development of education, such as the Integral System of Technologies for Schools and the Community (SITEC), whose main objective is the development and implementation of programs and projects in the technological sector. to strengthen digital learning and democratize the use of technology in the country with four main axes based on access to technological infrastructure, tax teachers educated in ICT to teach, educational software, community technology classrooms in the 1,117 circuits educational throughout the country. (Ministry of Education, 2015).

Therefore, the variables that have traditionally been related to academic performance must now be expanded to include technologies, especially those that correspond to the institutional technological environment, accessibility, and Internet use. These tools are understood as new determinants of academic performance since they affect student work at different levels and in different ways Duart (2008); Han & Shin (2016); Torres-Díaz et al. (2016), cited by (García-Martín & Cantón-Mayo, 2019). Many strategies are used to achieve good learning, as we currently know many methodologies that include technology in student learning are being implemented. According to Lucena et al. (2019) they mention that "the main teaching methodologies that have been introduced into education from the use of technology are e-learning, blended, learning, flipped, classroom and mobile learning" (p. 10).

The focus of the analysis is eminently centered on the attention given by researchers to the relationship between the use of educational technology and school performance, one of the fundamental concerns since the beginning of the implementation of computers in the classroom (Saettler, 2004). Saiz-Alvarez (2017) points out that not only is the medium with which the teachings are taught changing, the procedures and methods for teaching classes are also being modified and new teaching-learning models are being developed such as the flipped classroom, gamification or project-based learning. In relation to the teacher, it helps them to prepare classes, to have updated information and

to know teaching methods and resources, in this sense, ICT allows the teacher to obtain data and information on the subject that is going to be dealt with in class (Arroyo & Cid, 2013). With the help of technology, teachers find more didactic variants, manage content and guide students with more and better information. For this reason, Mendoza Ripaz (2022), mentions that "learning is considered for life and this constitutes knowledge, which is used and is also generated in such a way that it benefits both the institution and the entire society" (p.76)

Method

The present investigation is of a qualitative-quantitative type, since it has the requirements that are extremely rigorous in terms of its fixed analytical philosophy for scientific knowledge, it is of a descriptive type because it is a study to know who, how, when and why. the subject of study has the information obtained, in this type of approaches directly explains to an organization the object, concepts and accounts, this type of research is used to carry out research to describe the characteristics of certain groups, calculate the proportion of people and predict an event possibly in the future (Namakforoosh, 2007). It is field given that "data collection directly from the investigated subjects, or from the reality where the events occur" Avendaño (2006) and is also correlational and its design is non-experimental since "studies are carried out without the deliberate manipulation of variables and in which only the phenomena are observed in their natural environment to analyze them" (Hernández Sampieriet al., 2014). It should be said that, to carry out the research, a survey structured on a Likert scale was applied for the collection of data, said instrument consisted of a total of 10 questions addressed to the students of the Tax Educational Unit "Uruguay " (Guston & Sarewitz, 2002; Selwyn, 2003).

Study population

To achieve a better analysis of the influence of technology on the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year, a total population of 1,200 students was obtained, said information was provided by the institution.

Sample size

Using the formula for finite populations, the following calculation was made:

$$n = \frac{Z^2\ P\ Q\ N}{E^2\ (N-1) + Z^2\ P\ Q}$$

Where:
N = Population (1,200)
P = Probability of the event occurring (50%)
Q= Probability that the event will not occur (50%)
Z^2 =Confidence level (1.96)
e^2 =margin of error (5%)
n = ? (Sample size)

Discussion

Table 1 shows the behavior in academic performance with the implementation of technology.

Table 1
Technology has improved student academic performance

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	278	95,5	95,5	95,5
	No	13	4,5	4,5	100,0
	Total	291	100,0	100,0	

The results obtained show that 95.5% of those surveyed consider that with technology, student performance will improve, while 4.5% indicate that they do not contribute to academic performance.

Table 2 shows how education currently improves.

Table 2
Return to traditional education if it would improve academic performance

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	117	40,2	40,2	40,2
	No	157	54,0	54,0	94,2
	Maybe	17	5,8	5,8	100,0
	Total	291	100,0	100,0	

Through the results obtained, 54% of those surveyed indicate that returning to traditional education does not improve academic performance, since teaching processes evolve according to the context, while 40.2% indicate that if academic performance improves.

Table 3 shows how they use technology in education

Table 3
Technology is being used correctly

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	91	31,3	31,3	31,3
	No	145	49,8	49,8	81,1
	Maybe	55	18,9	18,9	100,0
	Total	291	100,0	100,0	

Through the results obtained, 49.8% of those surveyed consider that technology is not being used correctly in teaching processes, while 31.3% mention that it is being used properly.

Table 4 shows the impact of technology on education

Table 4
New technological inventions affect education

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	106	36,4	36,4	36,4
	No	133	45,7	45,7	82,1
	Maybe	52	17,9	17,9	100,0
	Total	291	100,0	100,0	

The results obtained show that 55.7% of those surveyed indicate that technological inventions do not affect education in educational institutions, favoring the acquisition of new knowledge, while 36.4% mention that said technological inventions do affect.

Table 5 shows the improvement of students with technology

Table 5
Technology improves the social life of students

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	191	65,6	65,6	65,6
	No	69	23,7	23,7	89,3
	Maybe	31	10,7	10,7	100,0
	Total	291	100,0	100,0	

With the results obtained, it is evident that 65.6% of those surveyed consider that technology improves the social life of students, generating knowledge and interaction, while 23.7% indicate that it does not improve life at a social level.

Table 6 shows how technology influences education

Table 6
Some technological invention that favors education

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	Computers	220	75,6	75,6	75,6
	phones	66	22,7	22,7	98,3
	Others	5	1,7	1,7	100,0
	Total	291	100,0	100,0	

The results obtained show that 75.6% of those surveyed indicate that computers favor education, becoming a versatile and enriching tool for student learning, while 22.7% indicate that telephones are a useful tool. innovative that allows you to perform different tasks.

Table 7 shows technology as a disadvantage for education

Table 7
Academic performance is so low these days

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	Why don't you use technology correctly?	255	87,6	87,6	87,6
	because they have no interest	16	5,5	5,5	93,1
	due to lack of motivation	20	6,9	6,9	100,0
	Total	291	100,0	100,0	

With the results obtained, 87.6% of those surveyed consider that academic performance is so low in these times because technology is not used correctly, while 5.5% indicate that it is because they have no interest in stimulate knowledge and commitment to learning.

Table 8 shows the use of technology in their education

Table 8
Use some technology for your academic performance

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	275	94,5	94,5	94,5
	No	16	5,5	5,5	100,0
	Total	291	100,0	100,0	

The results obtained show that 94.5% of the respondents indicate that, if they use technology to improve academic performance, since it contributes to the development of educational activities and learning, while 5.5 % indicates that they do not use technologies to improve their academic performance.

Table 9 shows the time that the student gives to technology.

Table 9
In order to educate yourself, how often do you use technology

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	1 to 2 hours	206	70,8	70,8	70,8
	2 to 4 hours	64	22,0	22,0	92,8
	4 or more hours	21	7,2	7,2	100,0
	Total	291	100,0	100,0	

With the results obtained, 70.8% of the respondents mention that the frequency with which they use technology is between 1 to 2 hours, which is used to search for information and solve academic problems, while the 22% indicate that between 2 to 4 hours is the time they use technology to strengthen their learning.

Table 10 shows how technology gives a change to the present

Table 10
Technology is very important in these times

		Frequency	Percentage	valid percentage	Accumulated percentage
Valid	And	281	96,6	96,6	96,6
	No	10	3,4	3,4	100,0
	Total	291	100,0	100,0	

The results obtained show that 96.6% of those surveyed mention that technology is important today, since it generates resources and information tools that contribute to the educational field, while 3.4% indicate that technology is not important

Hypothesis tests

In the hypothesis tests, Spearman's RHO correlation analysis of the variables proposed through the statistical program SPSS version 26 is carried out, considering the following: if the significance is < 0.05, the null hypothesis is rejected and if the significance is ≥ 0.05 the null hypothesis is accepted.

Hypothesis testing
General hypothesis

Ho: Technology DOES NOT INFLUENCE the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year.
H1: Technology INFLUENCES the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year

Table 11
General Hypothesis (correlations)

			Technology	Academic performance
Tau_b de Kendall	TECHNOLOGY	Correlation coefficient	1,000	,743**
		One. (bilateral)	.	,000
		N	291	291
	ACADEMIC PERFORMANCE	Correlation coefficient	,743**	1,000
		One. (bilateral)	,000	.
		N	291	291
Rho the Spearman	TECHNOLOGY	Correlation coefficient	1,000	,748**
		One. (bilateral)	.	,000
		N	291	291
	ACADEMIC PERFORMANCE	Correlation coefficient	,748**	1,000
		One. (bilateral)	,000	.
		N	291	291

Source: software SPSS Statistics

Based on what was obtained, a moderate positive correlation level of 0.748 is shown, being a higher level wherethe technology influences theacademic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year. In which, the analysis of significance 0.00 is less than 0.05, and even less than 0.01, demonstrating that there is a correlation between the variables, therefore, the alternative hypothesis is accepted.

Specific hypothesis 1

Ho: The technological infrastructure DOES NOT AFFECT the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year.
H1: The technological infrastructure INCIDES on the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year.

Table 12
Specific Hypothesis 1 (correlations)

			Technological infrastructure	Academic performance
Tau_b de Kendall	TECHNOLOGICAL INFRASTRUCTURE	Correlation coefficient	1,000	,626**
		One. (bilateral)	.	,000
		N	291	291
	ACADEMIC PERFORMANCE	Correlation coefficient	,626**	1,000
		One. (bilateral)	,000	.
		N	291	291
Rho the Spearman	TECHNOLOGICAL INFRASTRUCTURE	Correlation coefficient	1,000	,728**
		One. (bilateral)	.	,000
		N	291	291
	ACADEMIC PERFORMANCE	Correlation coefficient	,728**	1,000
		One. (bilateral)	,000	.
		N	291	291

Source: software SPSS Statistics

With what was obtained in the results, a moderate positive correlation level of 0.728 is evidenced, being a higher level, where technological infrastructure affects the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year. Thus, the significance analysis 0.00 is less than 0.05, and even less than 0.01, which shows that there is a correlation between the variables, therefore, the null hypothesis is rejected (Shahiri & Husain, 2015; Agatston et al., 2007).

Specific hypothesis 2

Ho: The use of pedagogical technology DOES NOT INFLUENCE the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year.
H1: The use of pedagogical technology INFLUENCES the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year.

Table 13
Specific Hypothesis 2 (correlations)

			EDUCATIONAL TECHNOLOGY	ACADEMIC PERFORMANCE
Tau_b de Kendall	EDUCATIONAL TECHNOLOGY	Correlation coefficient	1,000	,653**
		One. (bilateral)	.	,000
		N	291	291
	ACADEMIC PERFORMANCE	Correlation coefficient	,653**	1,000
		One. (bilateral)	,000	.
		N	291	291
Rho the Spearman	EDUCATIONAL TECHNOLOGY	Correlation coefficient	1,000	,770**
		One. (bilateral)	.	,000
		N	291	291
	ACADEMIC PERFORMANCE	Correlation coefficient	,770**	1,000
		One. (bilateral)	,000	.
		N	291	291

Source: software SPSS Statistics

According to what was obtained, a moderate positive correlation level of 0.770 is evidenced, being a higher level, where the use of educational technology influences the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year. Thus, the significance analysis 0.00 is less than 0.05, and even less than 0.01, demonstrating that there is a correlation between the variables, therefore, the alternative hypothesis is accepted. Although technology has allowed the transformation of the educational context, it has also updated the practices in the educational system, optimizing the study programs, with the aim of improving the ways of teaching and learning. It should be said that, currently, education still has challenges, but with technology it has been possible to have access to more information, facilitating communication capacity, strengthening digital learning, allowing access to technological infrastructure, both for teachers and students, therefore, having a digital education still implies facing challenges in terms of quality and equity (McGill et al., 1992; Mayer & Moreno, 2002).

However, the teaching practices that are being taught are being modified to new procedures and methods to teach classes, developing new teaching and learning models, aimed at improving academic performance in the classroom. The technological influence in education allows multiple benefits in the field of teaching, since it allows the older student interactivity, the search for documentation on the network, the creation of virtual learning environments, ease of performing autonomous tasks, among others. further. With the information collected through the surveys applied to the students of the "Uruguay" Fiscal Educational Unit, it is evident that 57.7% of the students mention that new technological inventions do not affect learning within the classroom due to to the fact that they are used as didactic tools, since they facilitate obtaining information and carrying out tasks, in addition, 87.6% indicate that academic performance drops when technology is not used correctly, likewise, 94, 5% of students make use of some type of technology since it contributes to the development of academic activities both inside and outside the classroom (Zeidner, 2007; Ozkan & Koseler, 2009).

Indeed, the importance of technological use has caused teachers, students and institutions at a general level to readjust the processes they execute, in order to transform and innovate them. Also, motivate students to develop their investigative skills, critical and reflective thinking, leadership and teamwork. According to Alcibar al. (2018) point out that: By including various technological tools in education, students can learn in different ways and at different rates, but the role of academic success in teaching remains an opportunity to measure student learning processes according to established standards, it is Thus, academic performance is a standard used to measure student learning in various subjects, which allows teachers to monitor the knowledge acquired and its application. (p.103-104)

According to Espinel Armas (2020) he mentions that "the new roles played in the classroom, both by teachers and students, require the adoption and adaptation of technologies to the educational process to create environments that seek to strengthen educational models and paradigms" (p.6). In this context, the students of the "Uruguay" Fiscal Educational Unit consider the incorporation of technologies in the classroom positive, mainly because traditional teaching practices are still clearly visible in the development and evaluation of subjects. Therefore, new technologies offer an excellent opportunity for the educational process, in which the educational institution is committed to preparing for its proper use and generating collaborative spaces for the effective development of society and building meaningful and advantageous learning (Honicke & Broadbent, 2016; Curcio et al., 2006).

Conclusion

Much of the analysis shows that technology can be used in the classroom so that the student is more motivated to study, we can see that this work shows the need for the use of ICTs as a means where the student feels comfortable when learning. In addition, learning models must be created and implemented in which cognitive skills are developed and allow significant educational use, therefore, technological tools have a positive impact on academic performance, in order to increase the quality and efficiency of education, since by being able to develop new didactic methods, the student's training process is promoted. Based on the results, it was possible to determine that technology influences the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year, this through statistical analysis in the SPSS version 26 program, evidencing that there is a moderate positive correlation of 0.778, with a significance of 0.00 which is less than 0.05, and even less than 0.01. Therefore, when students have technological means, it directly influences the academic performance of students, contributing to better learning and the acquisition of knowledge. In this sense, technology requires proper use, aimed at improving learning and consolidating current knowledge.

Academic performance is not only due to technology but also to the ways of bringing technology to the didactic part, that is, digital pedagogy, and for that, trained teachers are needed, there are already many teachers who are not trained to be able to teach with the present technology. and that is why it is sought that the teacher receives training so that he can use didactic methods in the classroom. Likewise, with what was obtained from, it was possible to verify that the technological infrastructure affects the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year, since with the statistical program SPSS version 26, it was demonstrated that there is a clear moderate positive correlation of 0.728, with a bilateral significance of 0.00 which is less than 0.05, and even less than 0.01. In this sense, technological spaces allow promoting access to general education, equity in teaching, teaching practice, quality learning and professional teacher development, as well as more effective leadership, guidance and management of the educational system, In addition, the student has the possibility of obtaining more information, access to technological tools and better communication.

Finally, with what was obtained, it was possible to show that the use of pedagogical technology influences the academic performance of the students of the "Uruguay" Fiscal Educational Unit for the 2021-2022 school year, which, with the statistical program SPSS, it was possible to record that there is a moderate positive correlation between the variables of 0.770 with a bilateral significance of 0.00 which is less than 0.05, and even less than 0.01. It should be said that the use of technology allows teachers and students faster and more efficient access to information, in having a more efficient use of the various sources of information available, contributing to teaching and learning, accompanied by an adequate use of the resources. However, another important point is that many students do not have technological tools and this can affect their performance and the difficulty of learning.

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